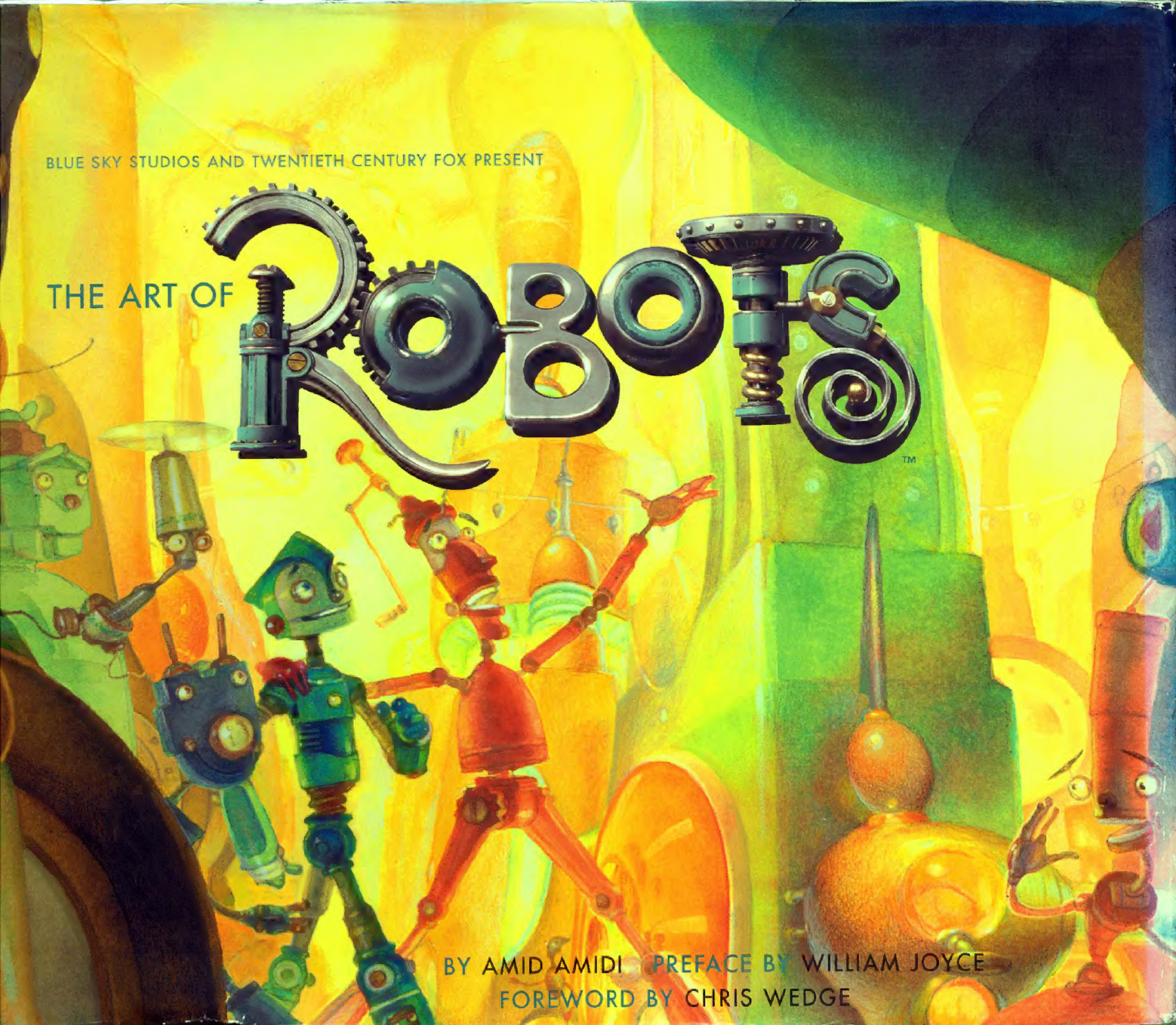
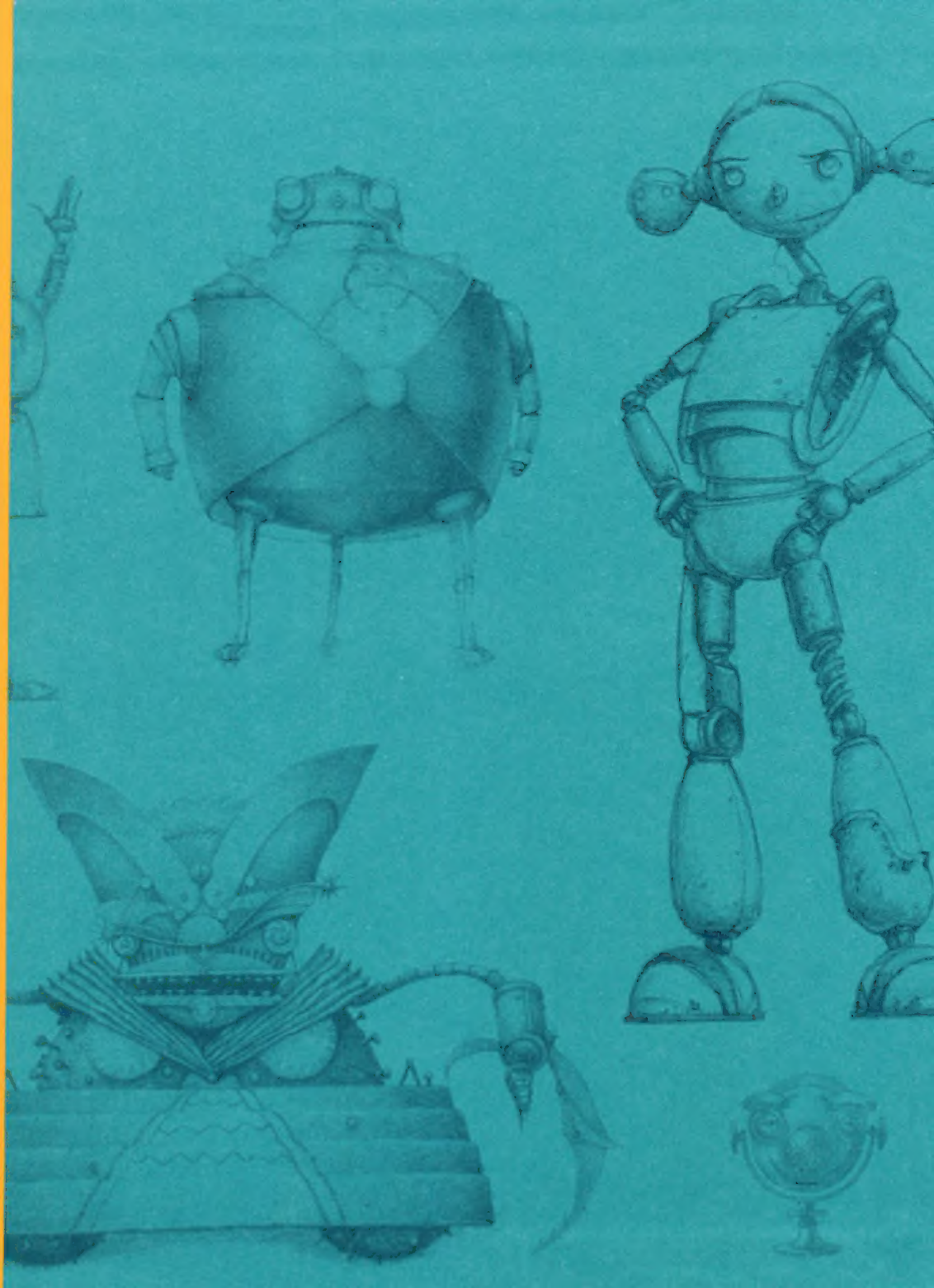
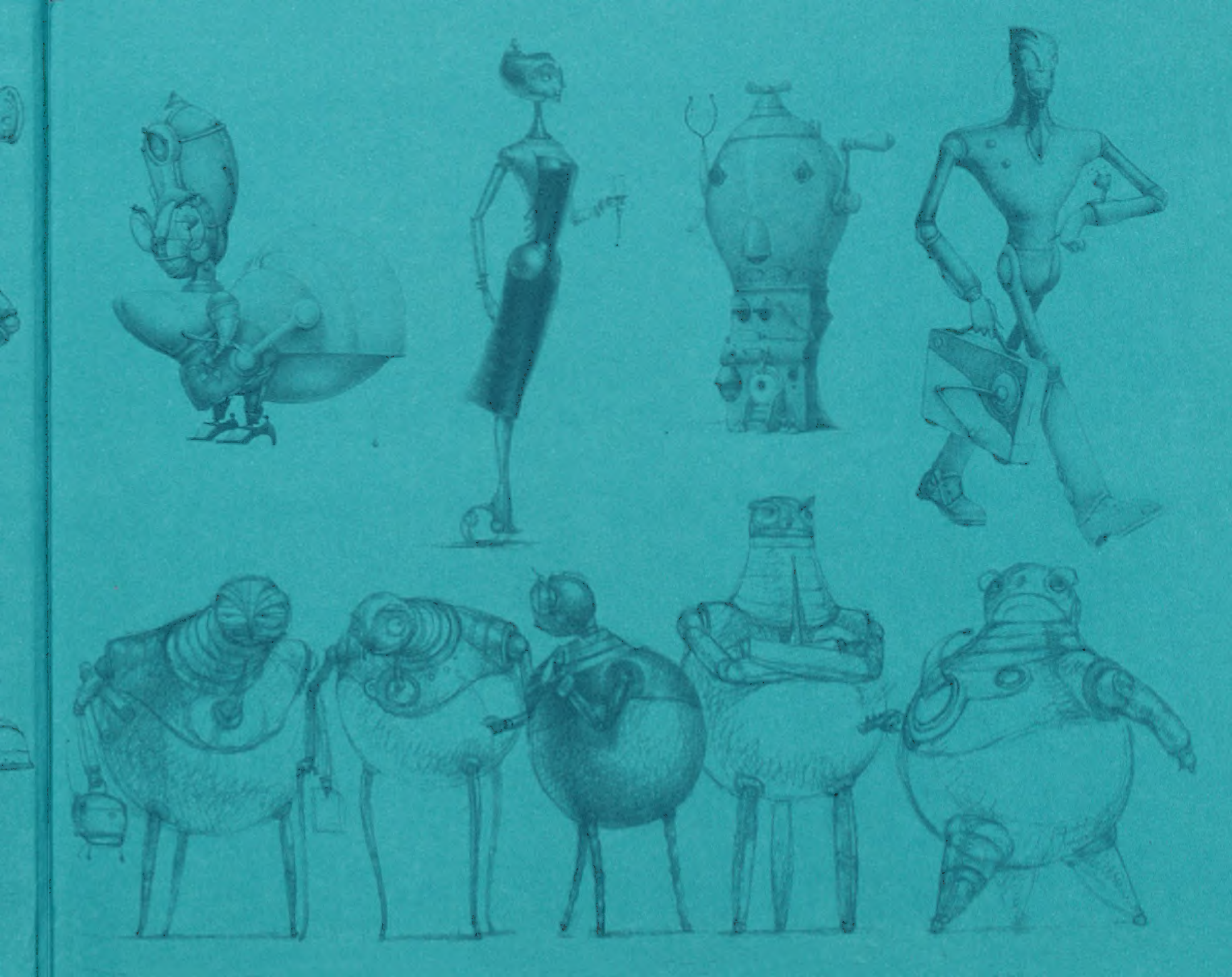
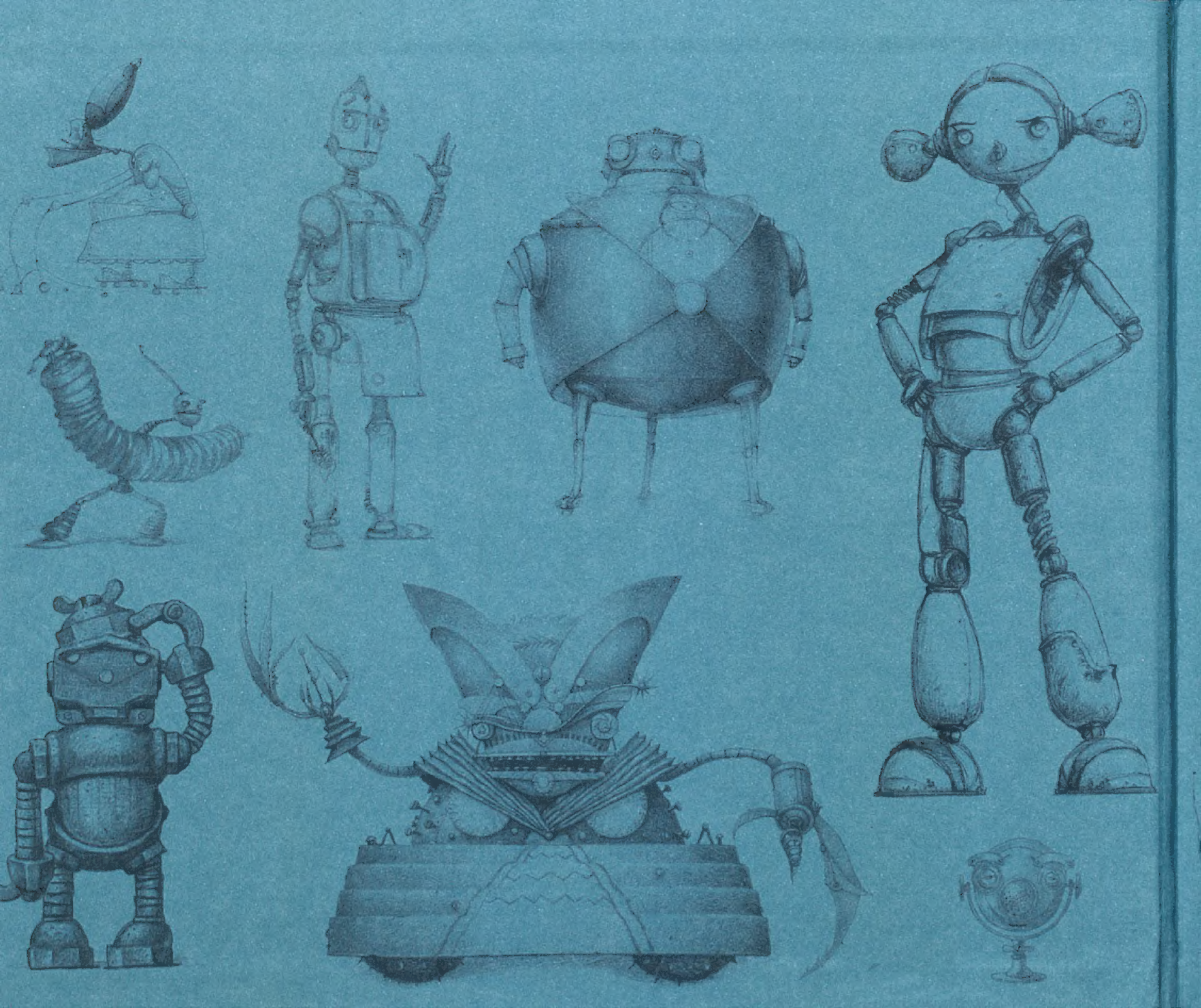

BLUE SKY STUDIOS AND TWENTIETH CENTURY FOX PRESENT
THE ART OF
ROBOTS
™
BY AMID AMIDI PREFACE BY WILLIAM JOYCE
FOREWORD BY CHRIS WEDGE

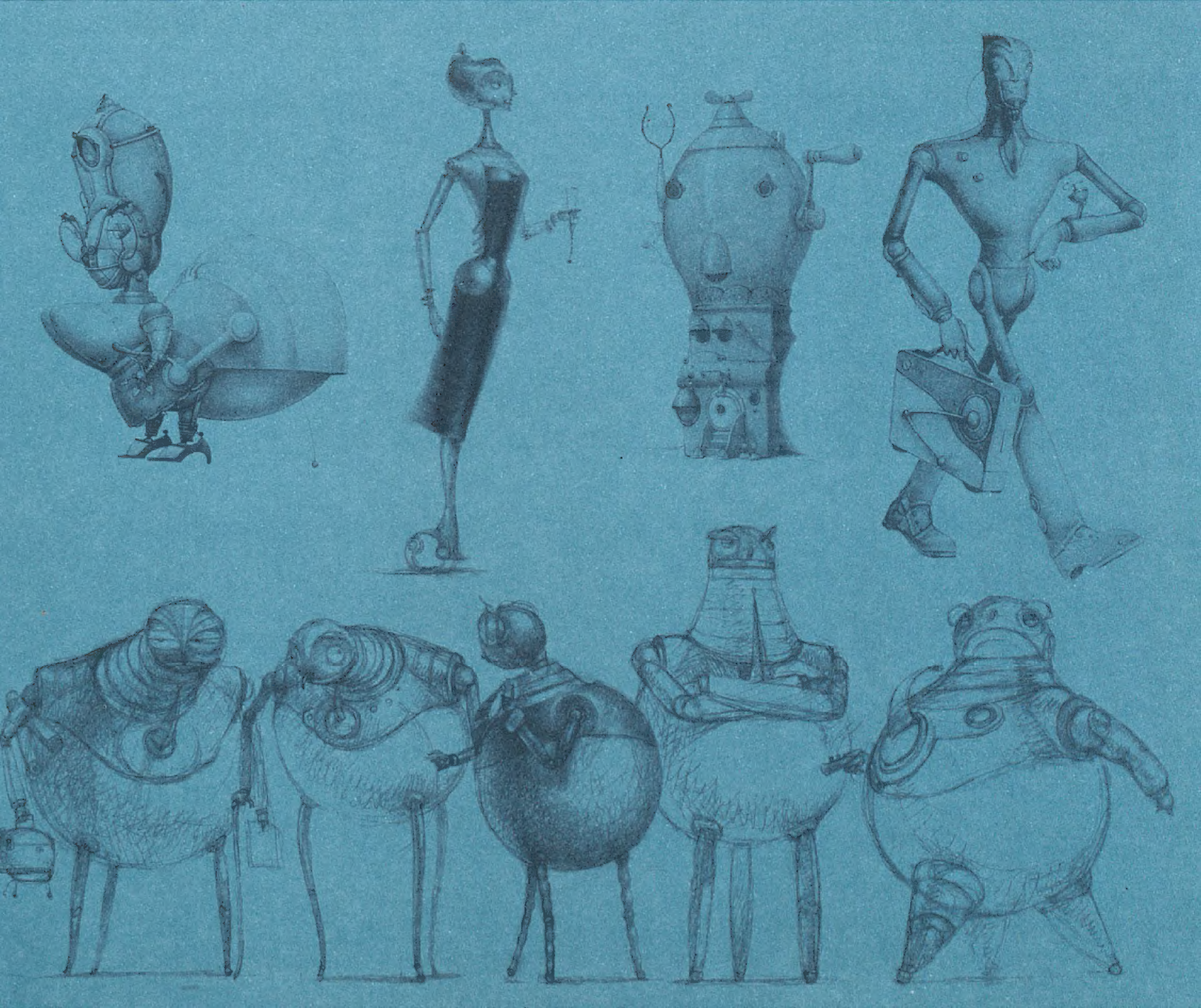
ROBOTS IS A MAGICAL CONTRIBUTION TO the art of animation from the stellar team of Blue Sky Studios, Twentieth Century Fox, Academy Award®–winning director Chris Wedge, and celebrated children's author William Joyce. Taking their inspiration from the machines of yesterday and today, they have brought to life a magnificent, visually complex world populated with a ragtag assortment of robots—from crude, bulky contraptions inspired by the industrial revolution to robots reminiscent of combustion-era automobiles to sleek, complex creatures influenced by contemporary hi-tech design.

Here to celebrate the motion picture is *The Art of Robots*, offering in-depth access to the hidden animation artistry behind the film. Page after colorful page features the brilliant concept art created by the team at Blue Sky Studios and by executive producer William Joyce, alongside quotes from the creators and insightful essays by animation expert and author Amid Amidi. *The Art of Robots* is an exclusive insider's guide to the making of a groundbreaking animated film.

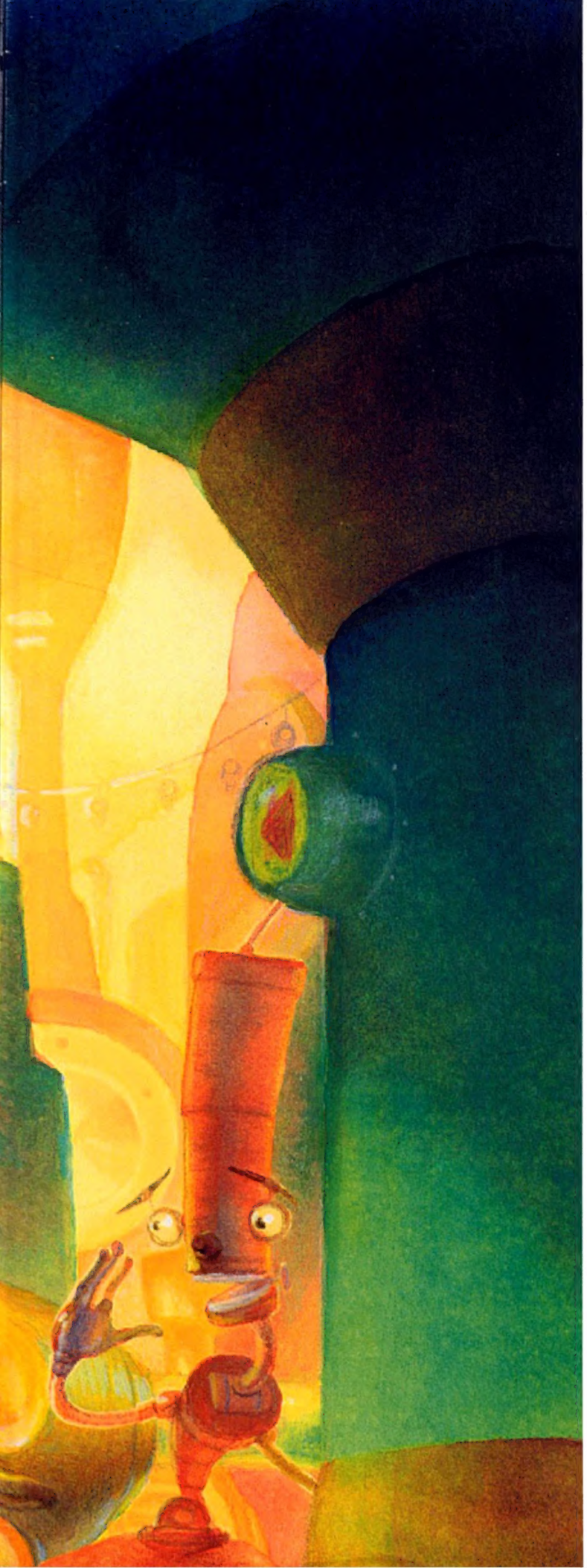








THE ART OF ROBOTS



BLUE SKY STUDIOS AND TWENTIETH CENTURY FOX PRESENT

THE ART OF ROBOTS™

BY AMID AMIDI

PREFACE BY WILLIAM JOYCE

FOREWORD BY CHRIS WEDGE

CHRONICLE BOOKS
SAN FRANCISCO

DEDICATION

To the members of our beloved crew at Blue Sky, who realize that nothing worth doing is easy. At long, long last, your very own, well-deserved coffee table book.
CHRIS WEDGE AND BILL JOYCE

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Page 1: WELCOME TO ROBOT CITY POSTER
Michael Knapp, 2002, Digital

Pages 2–3: THE RUSTIES SHOW RODNEY THE CITY
Greg Couch, 2002, Colored Pencil/Watercolor, 16 x 24

Above: CHOKING SAFETY POSTER
Michael Knapp, 2002, Digital

Left: EMERGENCY PLUNGER SAFETY POSTER
Michael Knapp, 2002, Digital

Page 5: FENDER'S PARENTS
Daniel López Muñoz, 2003, Pencil/Digital

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PREFACE

I once boasted in an interview that I'd like to design an entire world. The folly and arrogance of such a desire is matched only by its unlikely-ness to occur. The want ads are not bursting with the call for NEEDED . . . ENTIRE WORLD DESIGNED FROM SCRATCH. . . .

But fate can be a jolly prankster. It sometimes rewards or curses its more delusional Walter Mittys with their heart's desires. In the late 1990s I was presented with the opportunity to design and executive produce a feature film with Chris Wedge and his animation studio.

I took an instant shine to Chris and his team. This lanky provocateur and his amiable compadres are extremely good company.

That Twentieth Century Fox encouraged, financed, and finally approved our pipe dream still astounds me. You're basically making a movie one frame at a time, twenty-four frames a second. From nothing. Not a single thing you see on the screen existed until it was created for the movie. Every character; every doorknob; every countertop; every sky; every cloud; every eyelid, lash, or brow. Every ray of light, every shadow or color was designed, built, textured, rigged, lit, composed, composited, and pixilated onto the screen by an army of artists and craftspeople over the course of roughly four years.

It is a ludicrous, delusional enterprise on every level.

It takes a very rare patience, ingenuity, and devotion to craft to pull it off. Each animation studio has its own distinct character and level of excellence. The Blue Sky team is the best I've ever seen.

It isn't often these days the words "fun" and "work" are linked, but even the darkest and most tedious days on *Robots* were leavened with a sort of crazy, creative delirium that bordered on bliss. It was the most exciting and rewarding experience of my career.

But my wish to design an entire world didn't come true in the strictest sense. The world of *Robots* is a group effort. There's a little bit of everybody at Blue Sky in the way the movie looks. This book is a much-condensed chronicle of the teams' process and achievements. Forgive me if I have nothing but praise for these people. But the truth is they performed brilliantly and met every task that Chris or I asked of them with more ingenuity than the law allows.

So my dream came true and then some. I got to sit around with a group of remarkably talented people for almost five years and crack jokes, make up goofy stuff, and get paid for it.

Things like that only happen in, well, the movies.

WILLIAM JOYCE, EXECUTIVE PRODUCER/PRODUCTION DESIGNER

FOREWORD

The first thing Bill Joyce and I ever talked about was making a movie together. He called me at Blue Sky to introduce himself and talk about bringing his book *Santa Calls* to the screen. We spent the next hour jabbering about work, our kids, our hopes and fears, but most importantly, laughing our heads off. It was about the fastest friendship I've ever made. Years later, after the deal for *Santa* fell through, our dream was simply to make a movie. The initial idea for *Robots* was only slightly more sophisticated: "one about robots."

The story is about a young inventor named Rodney who, inspired to follow his own dreams, finds that life can get difficult and complicated. Eventually he wrestles with whether or not to just plain give up. Although we never felt like giving up on *Robots* (well, not often) it certainly got difficult and complicated. It wasn't long before we realized that making our fantasy project would require inventing absolutely everything in it from scratch: the story, the characters, the sets—the entire world.

I wish I could say we just dug in and cracked it wide open, but the truth is that neither Bill nor I came up with half the stuff in this movie. You'll see inspirational sketches and anecdotes about direction given, but ultimately the film was made by our crew. Over two hundred people, many more than are mentioned in this book, joined to make *Robots* a reality. They persisted through new ideas, failed ideas, and many, many changes. As they poured in their talent, the direction got clearer and designs were refined and expanded. Discoveries were made, adopted as changes, and as Big Weld says, "one idea led to another" until in most cases utterly thrilling original invention hit the screen.

After one of the first in-house screenings of some finished footage, one of our story veterans came up to me with a droll pronouncement: "This is where the movie gets bigger than the people who made it." It was like a burden had been lifted out of my arms and carried happily aloft by the crew.

At the beginning of the movie Rodney's dad says one of the corniest things you'll ever hear in your life: "Follow your dream, and never give up." It may be old-fashioned, but it is rock-solid wisdom. And now I know it for myself. Here's to all the Rodneys at Blue Sky—in these pages, between them, and behind them. Because of you, after many years, we are making the movie of our dreams.

CHRIS WEDGE, DIRECTOR

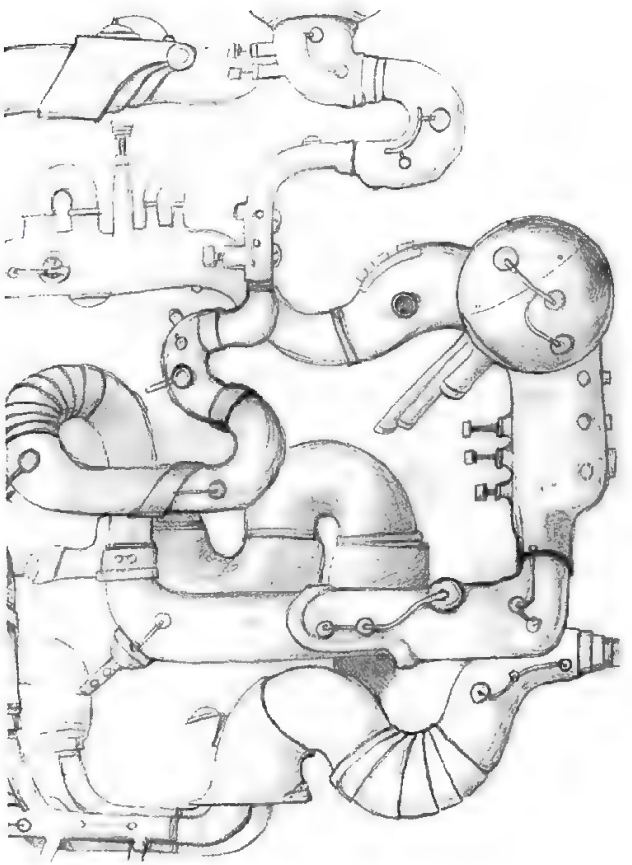
INTRODUCTION

> Robots will hopefully convince an audience that someone packed their camera gear and went to this crazy robot world—this whimsical, colorful, mechanical world—shot movie film of it, and brought it back. That's the look we were going for.
>
> CHRIS WEDGE, DIRECTOR

BLUE SKY STUDIOS, THE STUDIO BEHIND THE BLOCKBUSTER animated film *Ice Age*, and author-illustrator Bill Joyce were introduced to each other in the mid-nineties by Fox Animation president Chris Meledandri, who saw the possibilities of combining the richly detailed CG (computer-generated) animation of Blue Sky with the fancifully appealing drawing style of Joyce. The work of Blue Sky Studios had first come to Meledandri's attention when he saw the studio's animation of the dancing cockroaches in the live-action short in *Joe's Apartment*. "They created a Busby Berkeley–style dance number featuring cockroaches. It was incredibly inventive and broad, yet completely believable, and I thought, 'If these guys can be this original, funny, and clever, I've got to see what else they can do.'"

Joyce, a successful children's book author and illustrator whose works include *A Day with Wilbur Robinson* and *Dinosaur Bob and His Adventures with the Family Lazardo*, was no stranger to animation, having created two animated TV series—*Rolie Polie Olie* and *George Shrinks*—as well as contributing to visual development for the animated features *Toy Story* and *A Bug's Life*. The initial Chris Wedge/Bill Joyce project for Fox was adapting Joyce's holiday story *Santa Calls*. Although that particular project never went beyond the development stage, Joyce and Blue Sky director Chris Wedge were eager to explore another idea: robots.

For a time, this one-word concept was all they had. *Robots* didn't evolve out of a story or characters, says Wedge, but out of a very basic concept. "Anytime we told anybody that we wanted to do an all-robot movie in a world entirely composed of machines, people would go, 'Cool!'" says Joyce "I mean, there's something about robots that gives you an instant yummy nostalgia. But the vague idea of robots in our heads was cooler than the 'reality' had ever been. When we started to draw them, or even look at the pop culture history of robots, the only robot that was really interesting to look at was the robot from [Fritz Lang's seminal 1926 futuristic film] *Metropolis*. Every-thing else was basically a soup can."



CROSSTOWN PIPES
Bill Joyce, 2002, Pencil, 14 x 17

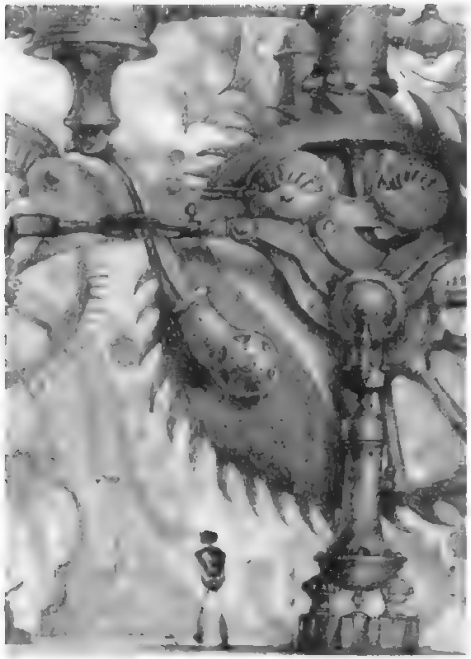
ROBIN ROBOT
Bill Joyce, 2001, Pencil, 18 x 24

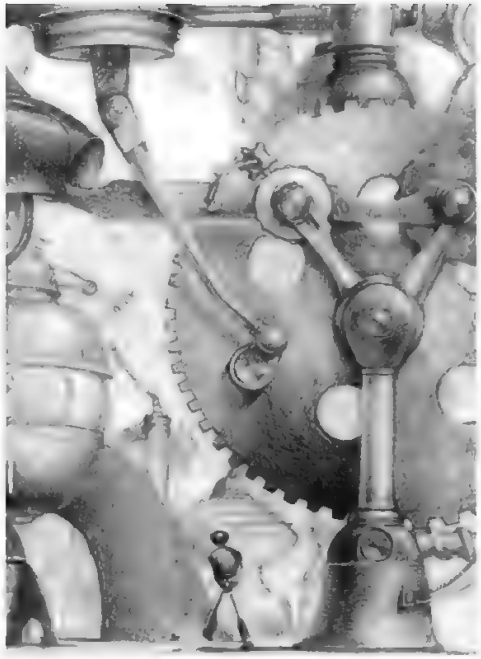
Joyce and Wedge paid a visit to the Brooklyn Museum of Art to see an exhibition on robots through the ages, and the experience intensified their conviction to take a completely different approach. "We realized we didn't want to do what everybody thinks of as the [look of the] future, because it's all gotten kind of quaint, in a way. We wanted an element of that, but we also wanted to go deeper. And instead of getting more complicated, we really got simpler. We just started looking at machines."

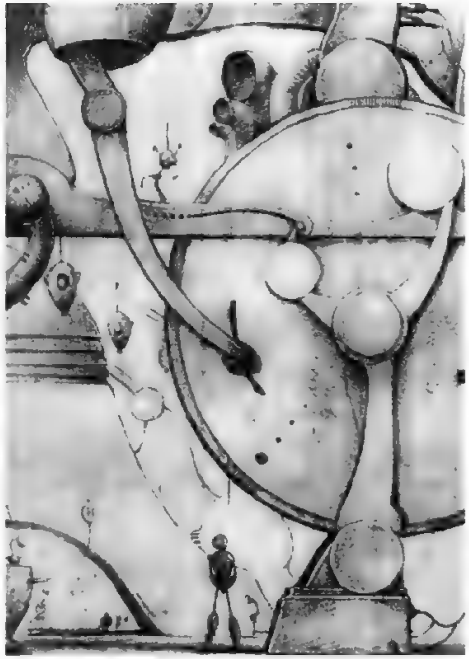
The decision to take their inspiration from the machines of yesterday and today opened the floodgates for a rich, visually complex environment. Art Director Steve Martino explains, "In the typical cartoon, you'll have a jet-propelled robot, and all his mechanical apparatus is hidden. All you see is smoke as the robot takes off. We thought it would be more fun to strip away the coverings and show the real mechanics. So if somebody is going to fly, put him in a pod, spring-load it, and fling him across the city. That way the audience gets to see the setup, the anticipation, and the result."

These core story concepts still needed to be worked into a compelling script so Chris Meledandri and his team at Fox began searching for a writer who "worked from character first" and could flesh out a cast of characters that would drive the visuals forward. They found their answer after reading the play *Fuddy Meers* by award-winning playwright David Lindsay-Abaire (*Kimberly Akimbo*, *Wonder of the World*). Lindsay-Abaire's strong focus on characters and relationships, combined with his dry sense of wit, was the perfect combination, and Meledandri brought him aboard the project. Meledandri says, "David is the one that really got our *Robots* story started. He wrote a sweet, funny draft that nailed a lot of the tone I had in mind for the movie. Originally I wanted to make it a musical with the feel of a 1930s screwball comedy. We agreed that the color and magic of this robot world would be more fun with music and the broad silly acting in movies like *The Inspector General*. David immersed himself in those old movies to find the stuff, and kept coming back with funny, corny lines. He actually wrote a song that I absolutely loved. Eventually we moved off of this approach, but much of what David did remains in the movie, including the main characters and their names. His writing was dry and funny and deep. I hope we can work together again someday."

Having settled on the nuts and bolts of how the robot world should look and feel, the filmmakers developed an overall design philosophy based on "What is" rather than "What if." Instead of going the traditional sci-fi route of prognosticating future technology, attempting to awe the audience with artificial intelligence and high-speed data streams, the design team wanted something fresher, with stronger connections to the experience of the audience. For this they looked again to our own industrial world and to its history, and organized the robot world into three distinct realms based on periods of technology from the early 1900s to the







present day: Steam, Combustion, and High–End.

The motifs for the steam-era design came from the earliest period of the Industrial Revolution, when parts were crude and bulky, and repairs were frequent. Objects are massive in weight and girth, and moving parts are rarely enclosed. Shapes are blunt, edges and surfaces unpolished, and steam escapes everywhere. This is the domain of Madame Gasket, Ratchet's evil and scheming mother who runs the city's subterranean Chop Shop.

The combustion-era elements are derived from early automobiles and the many engine-driven objects for home, work, and play that followed in the first half of the twentieth century. The robots of this vintage have moving parts that are smaller and partially covered with steel casings. Since these machines are powered by the gas and diesel engine, outflows for cooling and ventilation are built into the designs. Our hero, Rodney Copperbottom, and the Rusties, the motley crew of street-smart bots that he befriends, come from the Combustion era.

The High-End, or modern, era is epitomized by evil Big Weld Industries president Ratchet and benevolent inventor and Big Weld Industries founder Big Weld. Here mechanisms are completely hidden under a smooth skin of composite metal that conceals all of a robot's inner workings. Materials are streamlined and polished, seams are clean and tight, and curves are complex enough to suggest the hand of computer-assisted design.

Left: STEAM ERA
Greg Couch, 2001, Pencil, 14 x 17

Center: COMBUSTION ERA
Greg Couch, 2001, Pencil, 14 x 17

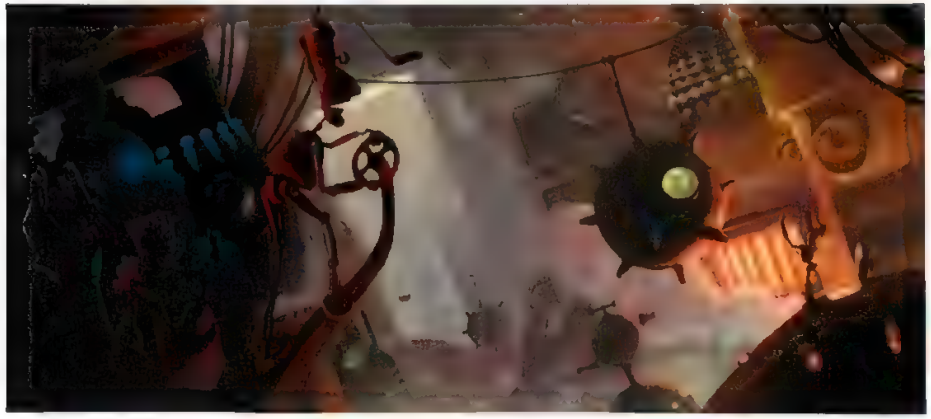
Right: MODERN ERA
Bill Joyce, 2001, Pencil, 11 x 17

As the story began to take shape, the core dynamic in the current state of the Robots' world emerged. "New robots are looking down on old robots," says Bill Joyce, "and the only way to stay on top of things is to keep upgrading yourself and getting new. And what if you want to stay the way you are, or you can't afford to keep improving yourself? You start to wear out." Wedge notes, "Basically what drives the story is how it would feel to be a robot and to become obsolete, to face your robot mortality."

These themes were further expanded upon when Chris Meledandri introduced Joyce and Wedge to the prolific screenwriting duo of Lowell Ganz and Babaloo Mandel, whose script credits include *City Slickers*, *Parenthood*, and *A League of Their Own*. "Lowell and Babaloo had never written a screenplay for an animated film, but when we began to expose them to our process they were immediately intrigued," says Chris Meledandri. "They went on to not only become the writers of the film but really our creative partners who have been with us every step of the way in the production of this movie." Lowell and Babaloo's approach to the story both differed and complemented David Lindsay-Abaire's character-driven philosophy. Meledandri says they immediately began to look at the big picture: "What's at the heart of this story? What's the journey of this movie? For Lowell and Babaloo, the comedy is the easy part. What they really go after is the emotional center of the story."

"When this stuff gets up on the screen," says Wedge, "people think that you had it in your head when you started: 'Of course, this place exists, and it just splashed on the screen in an hour and a half.' But it takes years of searching and throwing things out and doing things over to come up with a satisfying and uniform universe."

This book provides a detailed look at some of the inner workings of that years-long process of creative exploration and sheds light on how Bill Joyce and the talented crew at Blue Sky Studios were able to bring to life a world the likes of which no one has ever seen before.



DOWN IN ROBOT CITY
Michael Knapp, 2001, Digital

RIVET TOWN

UNDERTAKING A FILM ABOUT SOMETHING AS FANTASTIC AS ROBOTS in an all-robot world presented to the team at Blue Sky Studios both an opportunity for uninhibited creativity and a demand for the strictest storytelling discipline. Beginning with a blanker slate than usual, so to speak, because the context of the film was a wholly imaginary universe, the artists and writers had a license to go wild. Simultaneously, however, they had the task of creating a vivid world and characters that audiences would believe in. From the very start of production, the filmmakers found they had to answer essential questions about where the robots lived and what they could and could not do.

"We were trying to create a universe parallel to ours so that the story would resonate emotionally for audiences," explains Art Director Steve Martino. "But we also wanted it to be surprising and fun at every turn, and really wanted to play off the fact that it's a mechanical fantasy world. So the first step for me was really digging in and trying to create a style guide. Typically a style guide wrestles only with issues of design: What is the shape and the form? But in this film, there was this whole other body of questions that we had to answer just about the world. Do robots fly? Do they eat and drink? Is there weather?"

Chris Wedge describes the difficulties of directing a film whose world exists only in the minds of its makers: "It was very intimidating at the beginning, because for a long time we had no idea what the limits of the world were and how fantastic we'd be able to make it. But as the work collects, the movie world starts to talk back to you. It's really a process of discovering things. You wade into the pool first, and then everybody jumps in." Chris Meledandri adds, "There is a timeless quality to Chris Wedge's work. The characters he creates will be as appealing and relevant in fifty years as they are today."

As the laws of the robot universe were developed and refined, the film's story next required from the team an explanation for the origins of the robots themselves. They decided that in the robot world, would-be parents say, "Let's make a baby," and commence the project as hobbyists: They buy a kit. The couple then stays up all night constructing the baby, usually from a kit with a make and model similar to their own. They may add a family heirloom, such as Grandpa's distinctive nose. One jump-start later, the adventure of parenthood begins.

Thus enters the young protagonist of *Robots*, Rodney Copperbottom. In the robot

BUILDING THE BABY
Greg Couch, 2002, Acrylic/Digital

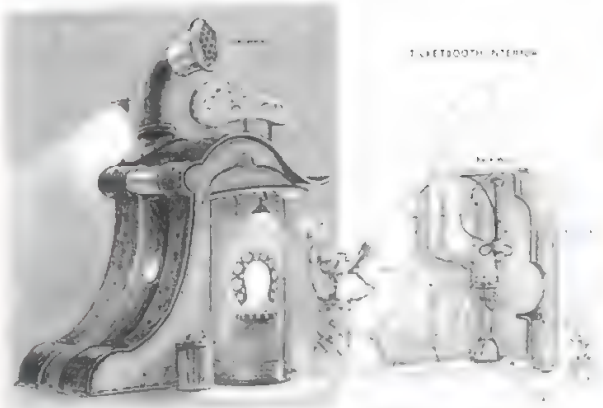
version of growing up, parents are responsible for upgrading their children yearly. Each year as the robots grow, their parts are exchanged for increasingly more adult-sized parts, until the bot becomes fully "grown" at age sixteen.

One of the unique things about this world is that the parts a robot is outfitted with determine his or her function in life. In the case of Mr. Copperbottom, it was decided that he would have a more practical job as a dishwasher rather than pursuing his dream of becoming a musician.

The issue of upgrades becomes a central story point in the character of corrupt industrialist Ratchet. The president of Big Weld Industries, Robot City's only upgrade manufacturer, Ratchet develops a scheme whereby upgrading oneself becomes a requirement of the robot lifestyle. Subject to the whims of fashion and planned obsolescence, Ratchet makes the upgrades expensive to obtain, and robots who can't afford upgrades become targeted for elimination at the Chop Shop. A classic struggle of personal and class values emerges, with robot survival at stake.

Rodney and his parents live in Rivet Town, a sleepy suburban hamlet steeped in small-town Americana, but with robotic twists: there stands a picket fence made of gearwheels; here we see cobblestone streets composed of hexagonal bolts. City Hall bears an uncanny resemblance to a coffee grinder. As the story begins, Rodney is ready to leave the quiet streets of Rivet Town to fulfill his amibitions in the city. Rivet Town, the metaphorical "Anytown, USA" of the robot world, is our introduction to the unique and expansive robot universe created by the Blue Sky artists, and serves as the jumping-off place for both Rodney's journey and the audience's.

RIVETOWN TRAIN STATION.



Above left: STATION TICKET BOOTH DETAIL
Daniel López Muñoz, 2003, Pencil, 14 x 17

Above right: RIVET TOWN STATION
Design by Daniel López Muñoz,
CG Model by Sheldon Chow,
2003, Radiosity Render

Left: RIVET TOWN STATION COLOR
Vincent Nguyen, 2003, Digital

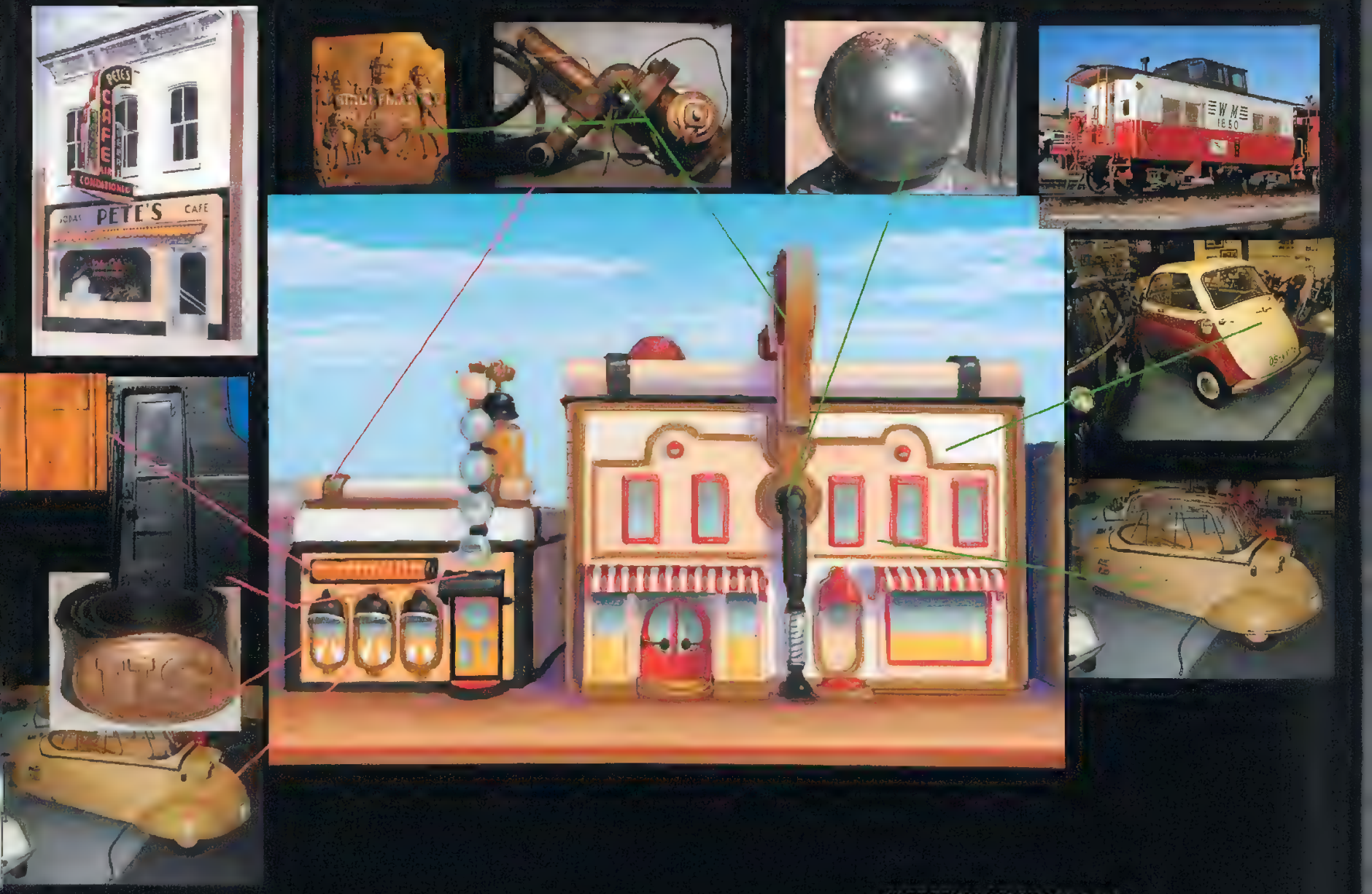
Opposite: RIVET TOWN STATION
Daniel López Muñoz/Bill Joyce,
2003, Pencil/Digital

Rivet Town is all kitchen utensils. We used a lot of cream color, as if they'd painted it. It's a nice town; they've taken care of it, but it doesn't have that sheen that uptown would have.

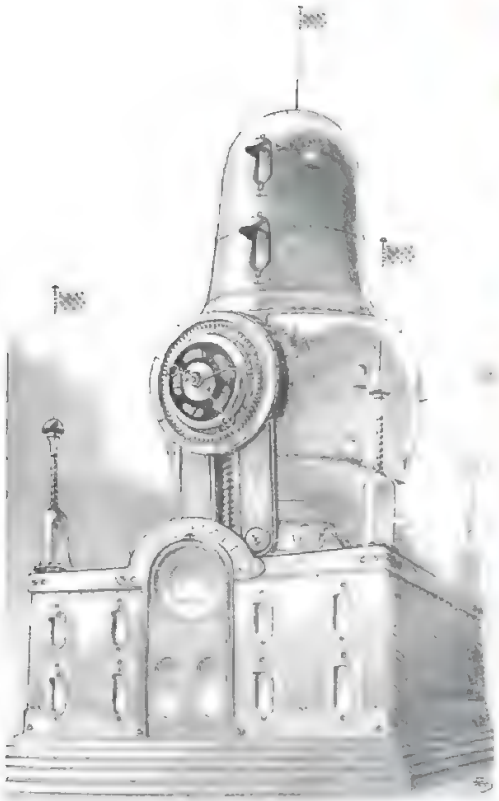
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

My job was to preserve the style of Bill's designs as we modeled characters and props. After modeling, we'd get into a stage called rigging, where we created the full range of motion for the animators to use. The tricky part is to make sure the flexibility of movement doesn't destroy the balance of shape and form that made a character so interesting when Bill drew it on the page.

STEVE MARTINO, ART DIRECTOR



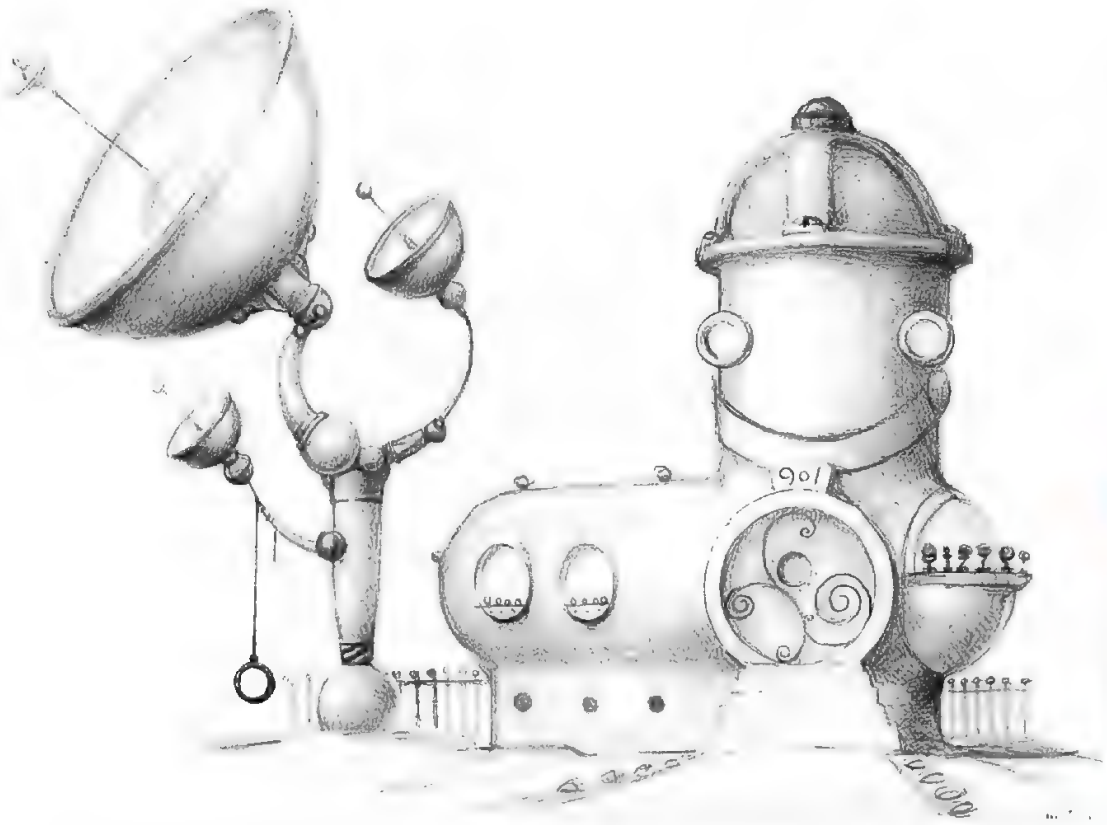
RIVET TOWN COLOR CALLOUTS
Vincent Nguyen, 7/30/2003, Digital



Above: RIVET TOWN CITY HALL
Daniel López Muñoz, 3/2003, Pencil, 14 x 17

Right: RIVET TOWN COLOR CALLOUTS
Vincent Nguyen, 7/30/2003, Digital

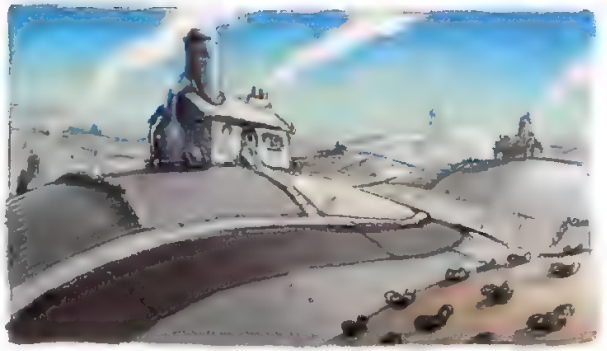
RODNEY'S CHILDHOOD HOME



COPPERBOTTOM HOME
Bill Joyce, 2001, Pencil, 12 x 17

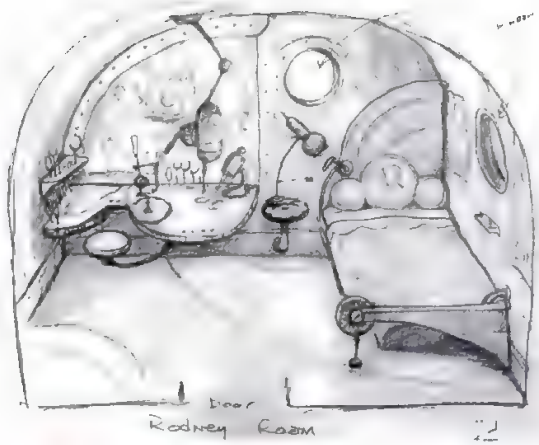
Rodney's house is like an Airstream trailer crossed with a coffee pot. There are a couple of shots of the landscape, so we needed to evoke vegetation even though there are no trees or plants in this world. The hedge or fence is really just a bunch of gears, and the ploughed field is layers of corrugated metal. So we managed to evoke farmland without breaking the concept.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



COPPERBOTTOM HOME
Michael Knapp, 2001, Pencil/Digital

Opposite: RODNEY'S HOME COLOR ROUGH
Thomas Cardone, 7/2003, Digital



We call Bill's compositional style Big-Little-Tiny. He always has some large shape that gives your eye a place to rest. Then around that, he'd bring in little shapes, and then tiny details. The detail gives scale to the larger shape. What's interesting about Bill's drawings is there's that same balance of form from the largest scale to the smallest detail. You see it in a city vista in the composition of buildings, and you see it in a little key with an even smaller whimsical detail on it. I think it comes from his skill in staging single-panel compositions for children's books. You want the audience to have fun as you guide their eye around the space. He gives you solid compositions with shapes that don't clutter the frame, but then your eye can move through the image and find all those surprising little details.

STEVE MARTINO, ART DIRECTOR

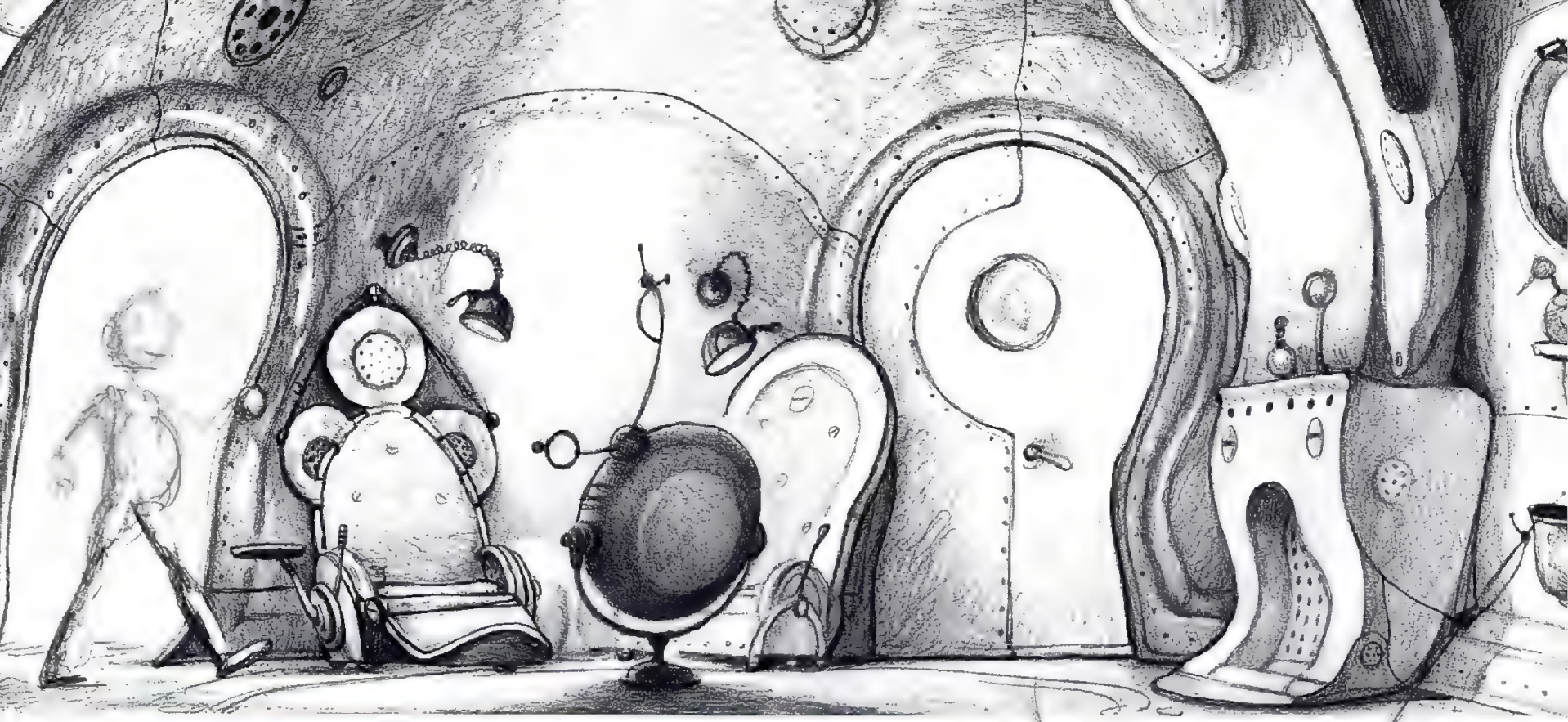
Top left: RODNEY'S ROOM
Bill Joyce, 3/2003, Pencil, 8½ x 11

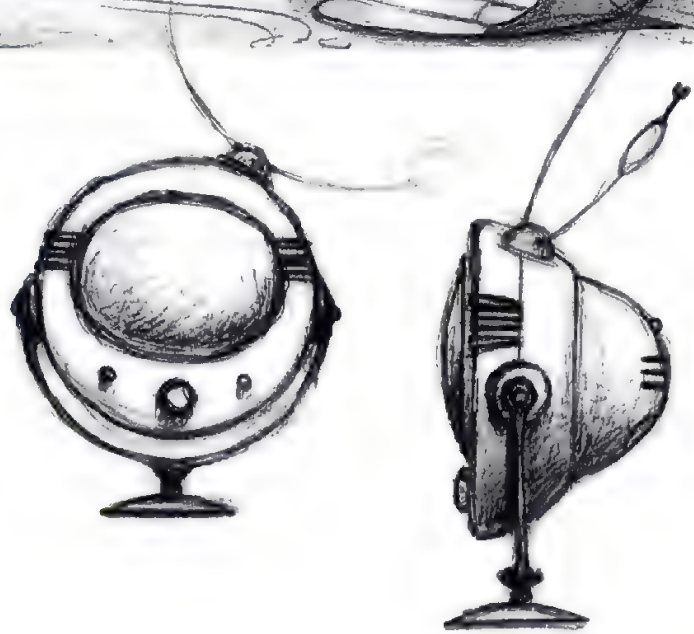
Left: RODNEY'S ROOM COLOR
Thomas Cardone, 5/2003, Digital

Opposite, clockwise from top:
COPPERBOTTOM LIVING ROOM
Bill Joyce, 3/2003, Pencil, 7½ x 15½

TV FROM RODNEY'S ROOM
Michael Knapp, 3/2003, Pencil, 7 x 7½

COPPERBOTTOM KITCHEN
Thomas Cardone, 5/2003, Digital





MRS. COPPERBOTTOM

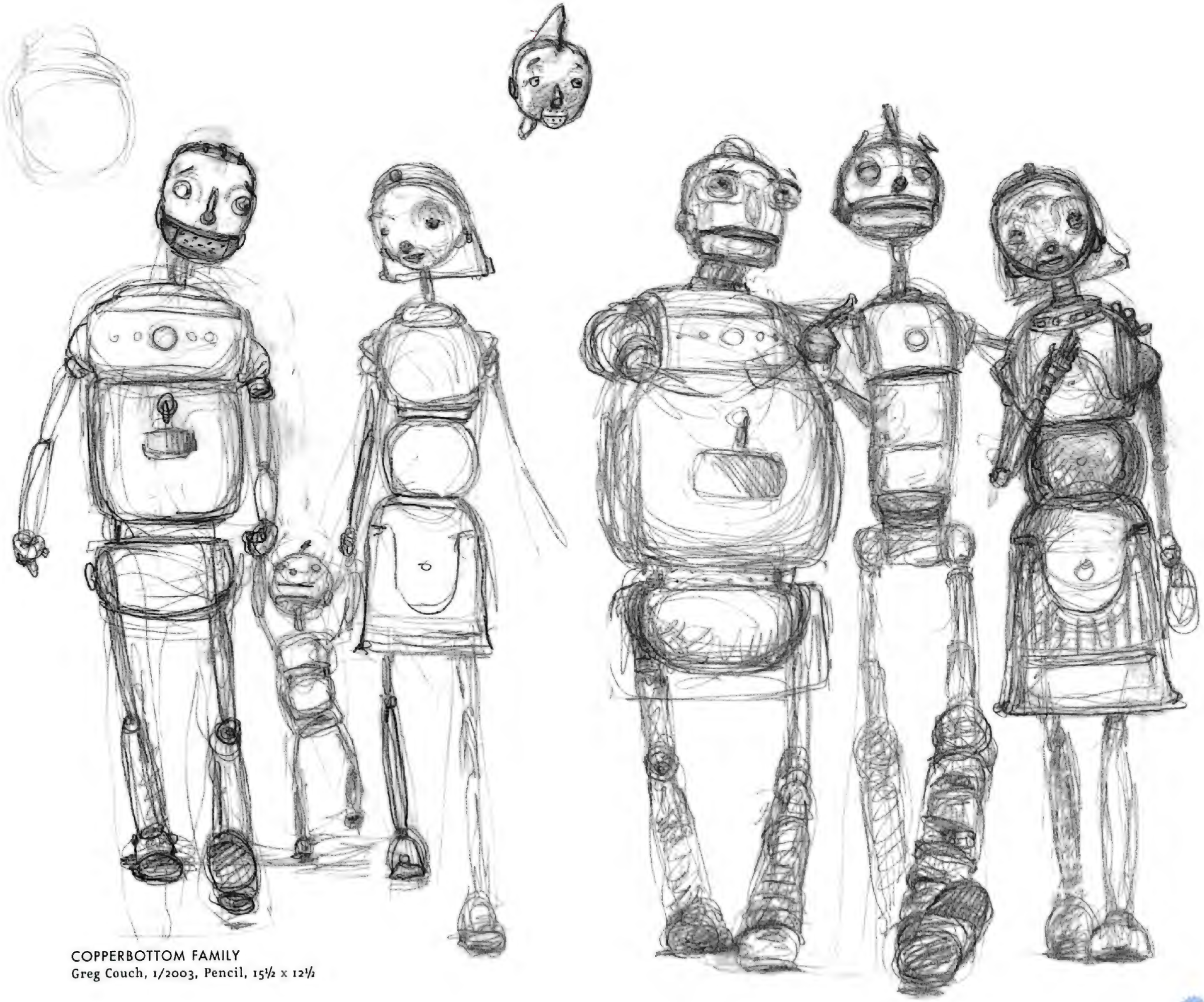
This [opposite page] was an early drawing of the Copperbottom family. Mainly I was trying to see how the facial characteristics of his parents would blend, so Rodney's face would look like the inevitable result of genetics, even though he was built from a kit.

GREG COUCH, DESIGNER

The great thing about the color scheme with Rodney's parents is the mother is green and the father is blue, and Rodney is greenish-blue. That was intentional, to make him look like he was a mix of the two.

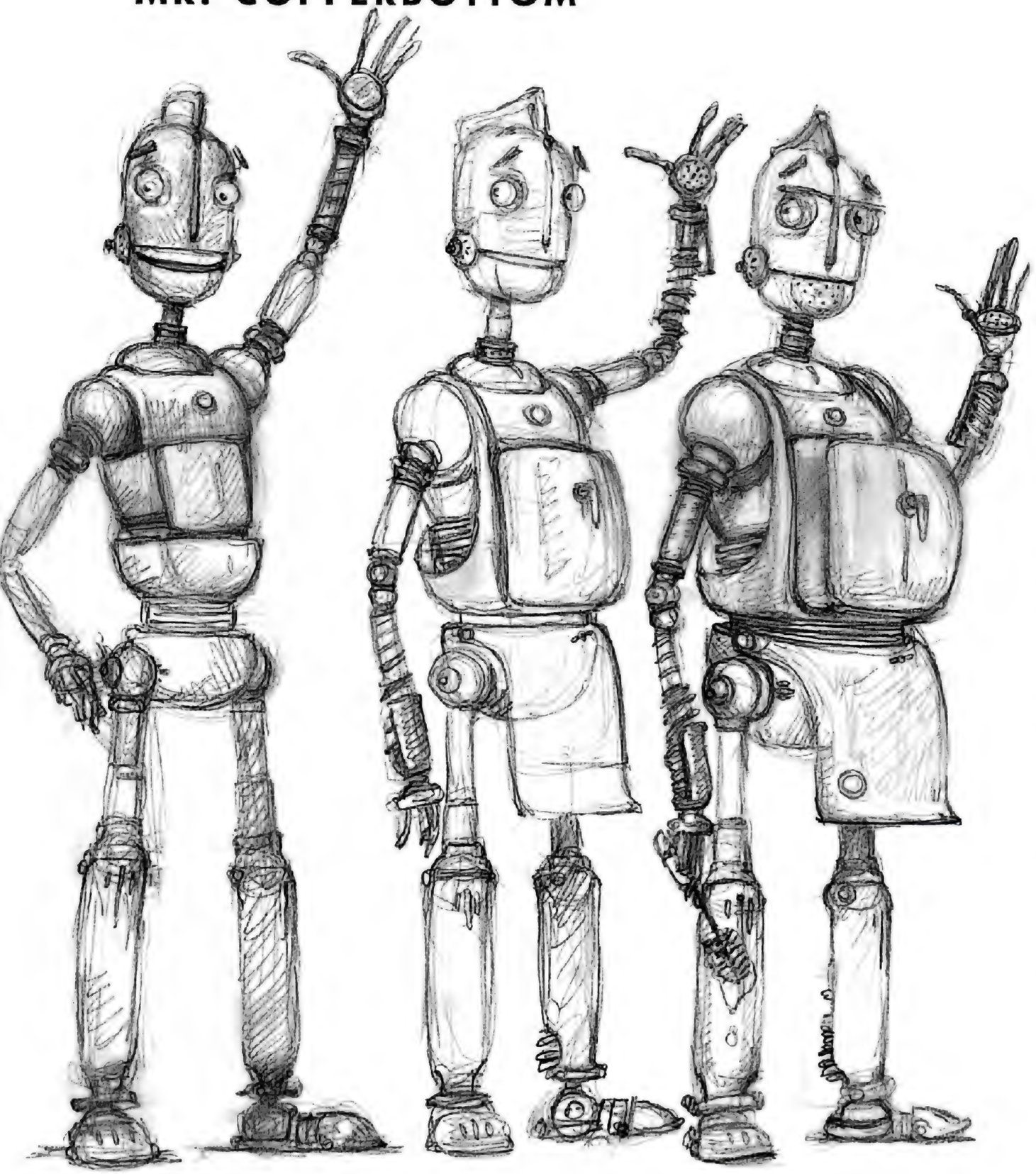
MIKE ERINGIS, MATERIALS LEAD

MRS. COPPERBOTTOM COLOR CALLOUT
Vincent Nguyen, 7/2003, Digital



COPPERBOTTOM FAMILY
Greg Couch, 1/2003, Pencil, 15½ x 12½

MR. COPPERBOTTOM



He's Rodney, but with a dishwasher . . . One of the things that was undecided was, how do you make a robot age?

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

We tried to find ways to change him over time but to keep the impact low on modeling so we didn't have to redo everything. So we decided we would slowly scale his dishwasher appendage and pull it out.

GREG COUCH, DESIGNER

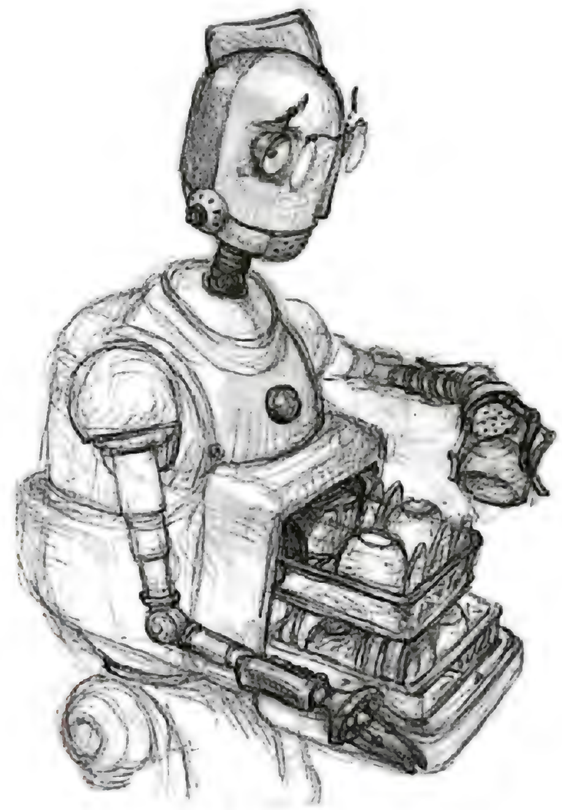
We also shrunk and lowered him a little, the way an old guy would shrink.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Rodney's parents are fun to animate because they're not the main characters, so you can take more risks with them. The father is actually based on Rodney —he's what we would have done with Rodney if he weren't the hero.

MIKE THURMEIER, ANIMATION LEAD

AGING MR. COPPERBOTTOM
Greg Couch, 2003, Pencil, 14 x 17



COPPERBOTTOM DISHWASHER
Greg Couch, 2/2004, Pencil, 14 x 17

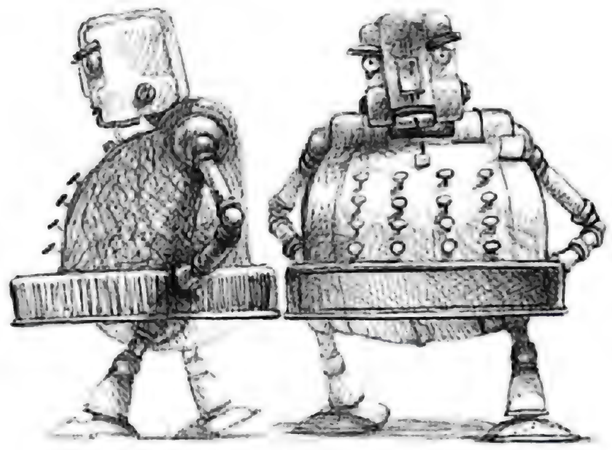
Above: RIVET TOWN DINER COLOR
Thomas Cardone, 2003, Digital

Left: MR. COPPERBOTTOM COLOR CALLOUT
Dice Tsutsumi, 2/2004, Digital

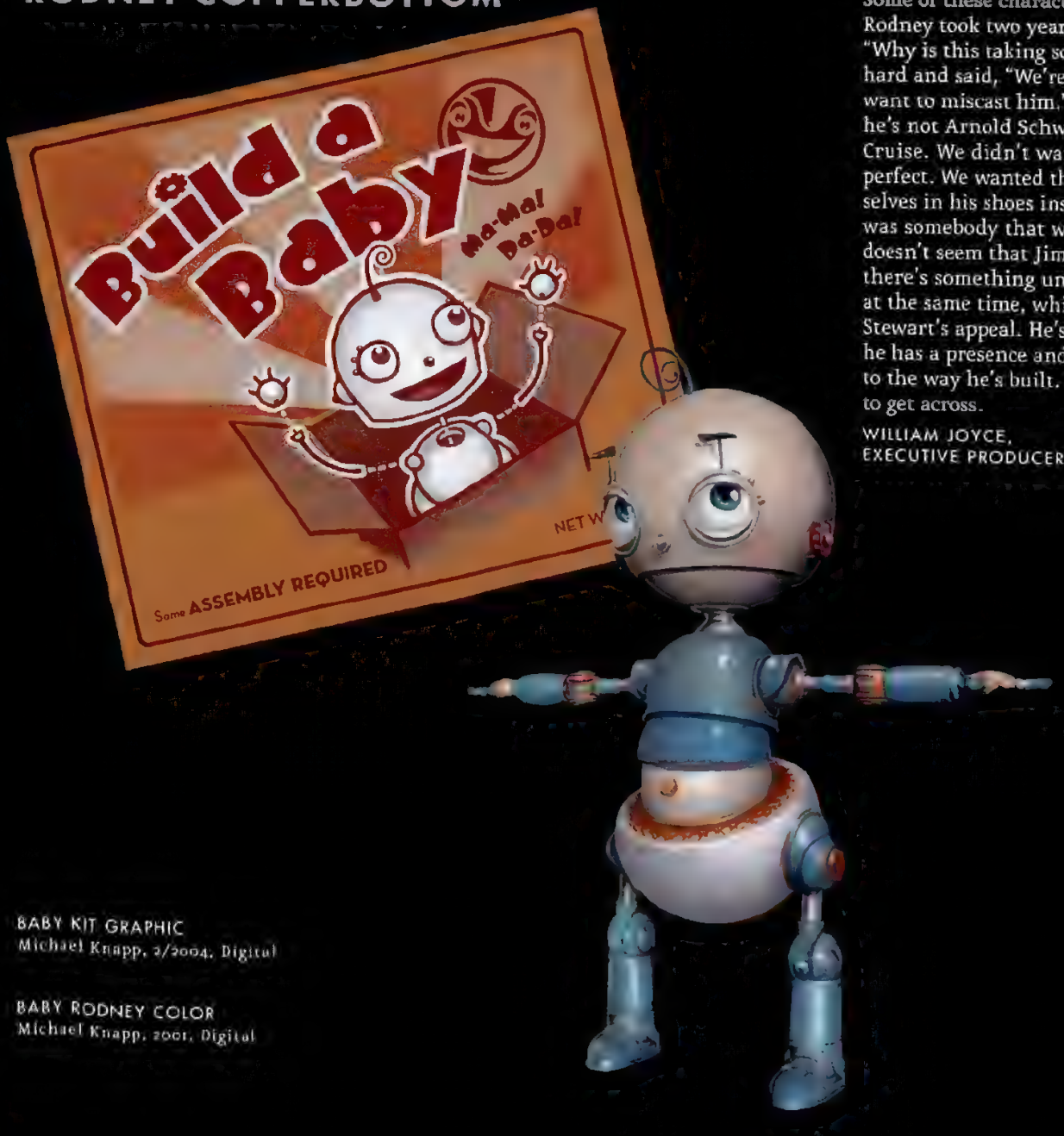
Above: MR. COPPERBOTTOM, BEHIND AT WORK
David Gordon, 2003, Pencil, 14 x 17

Right: MR. GUNK
Greg Couch, 2003, Pencil, 14 x 17

Opposite: CLUNK'S SHOP
Bill Joyce, 2001, Pencil, 14 x 17



RODNEY COPPERBOTTOM



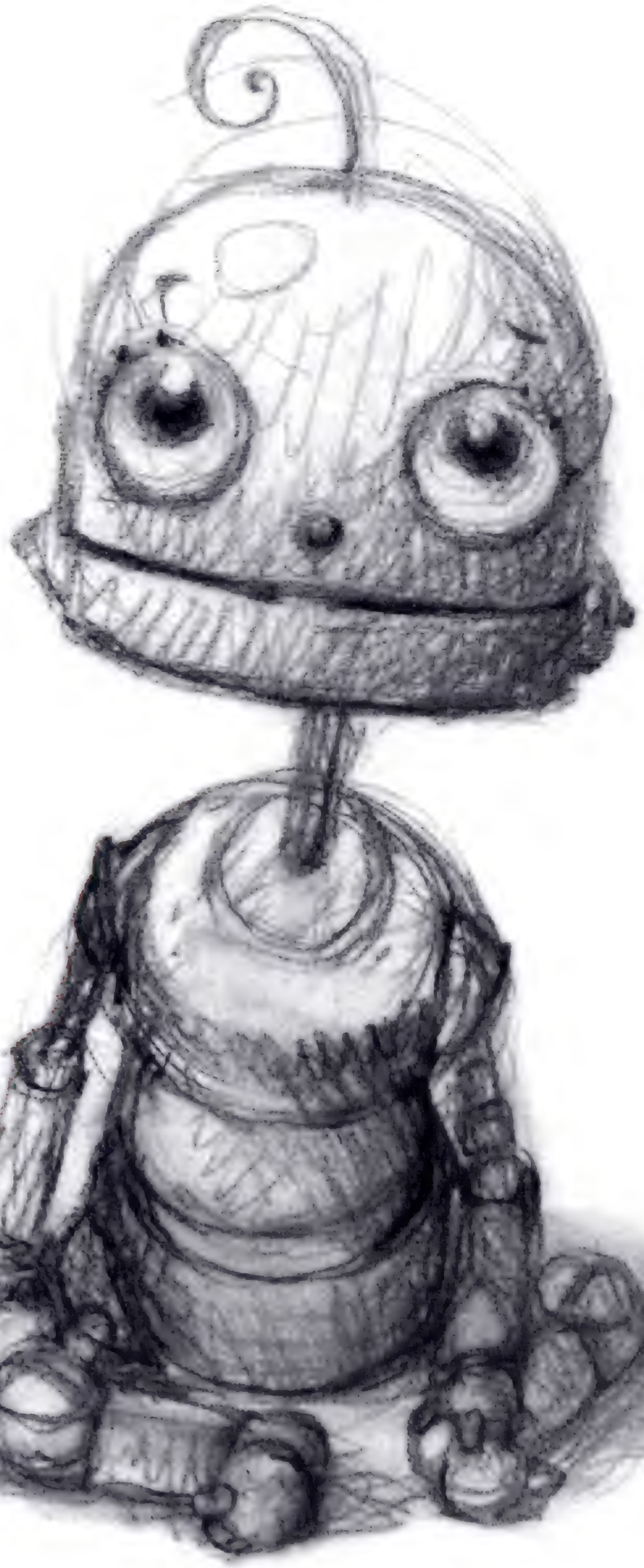
Some of these characters got nailed in one drawing, but Rodney took two years. One of the Fox executives asked, "Why is this taking so long?" And I thought long and hard and said, "We're designing a movie star. We don't want to miscast him." He's an amiable ordinary fella, he's not Arnold Schwarzenegger and he's not Tom Cruise. We didn't want him to be too muscular or perfect. We wanted the audience to be able to put themselves in his shoes instantly and easily. Jimmy Stewart was somebody that we kept thinking about. Rodney doesn't seem that Jimmy Stewart-ish in design, but there's something ungainly and graceful about him at the same time, which I think was a lot of Jimmy Stewart's appeal. He's lanky, but within that lankiness he has a presence and command that seems contrary to the way he's built. That's a very subtle thing to try to get across.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

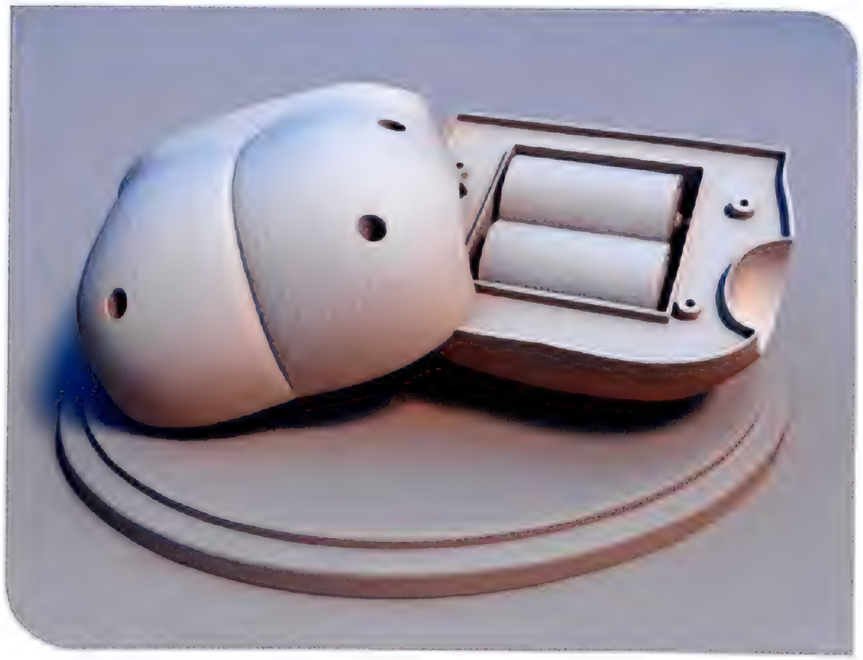
BABY KIT GRAPHIC
Michael Knapp, 2/2004, Digital

BABY RODNEY COLOR
Michael Knapp, 2001, Digital

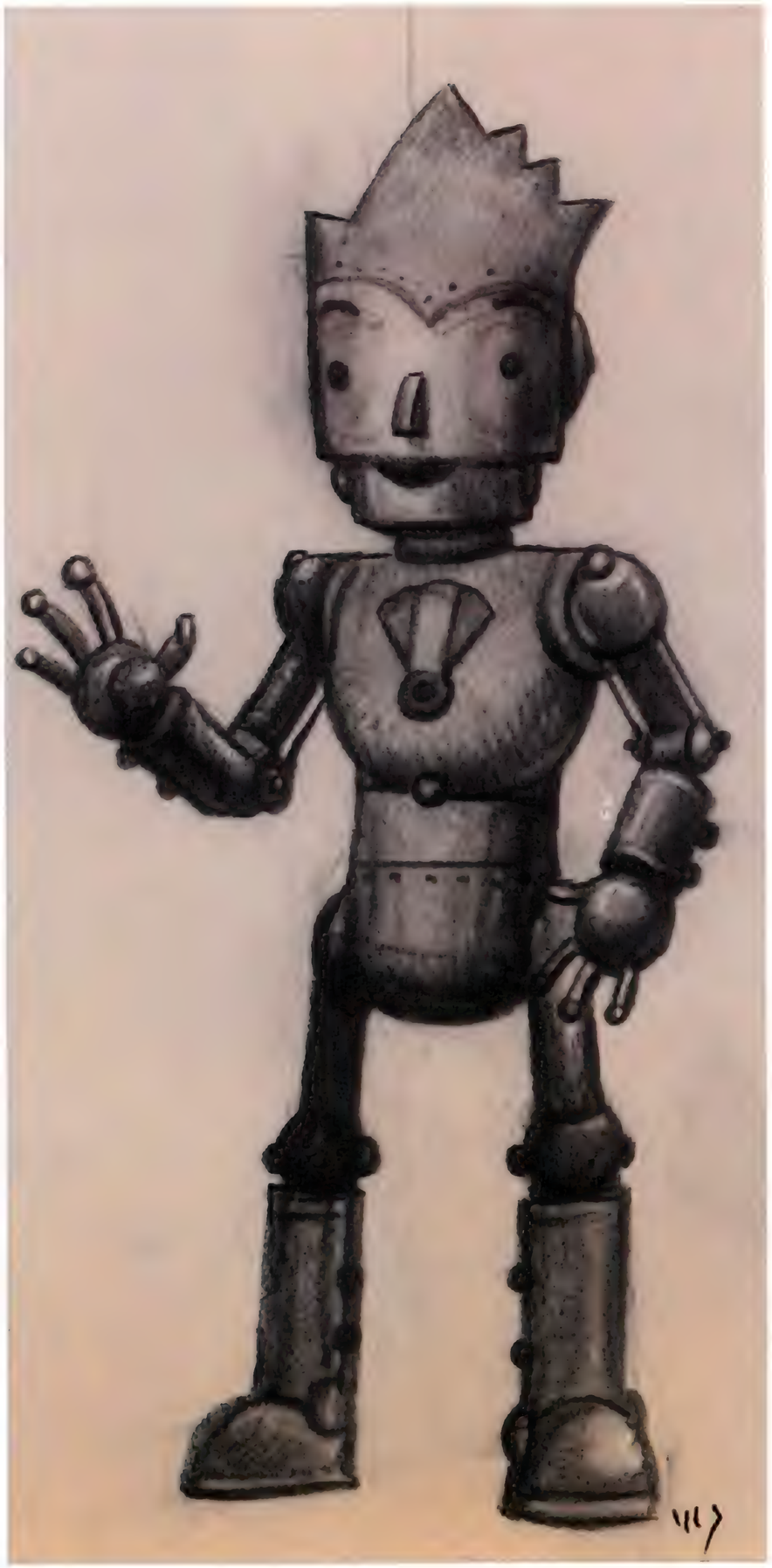
BABY RODNEY
Greg Couch, 4/2003, Pencil,
4½ x 7½



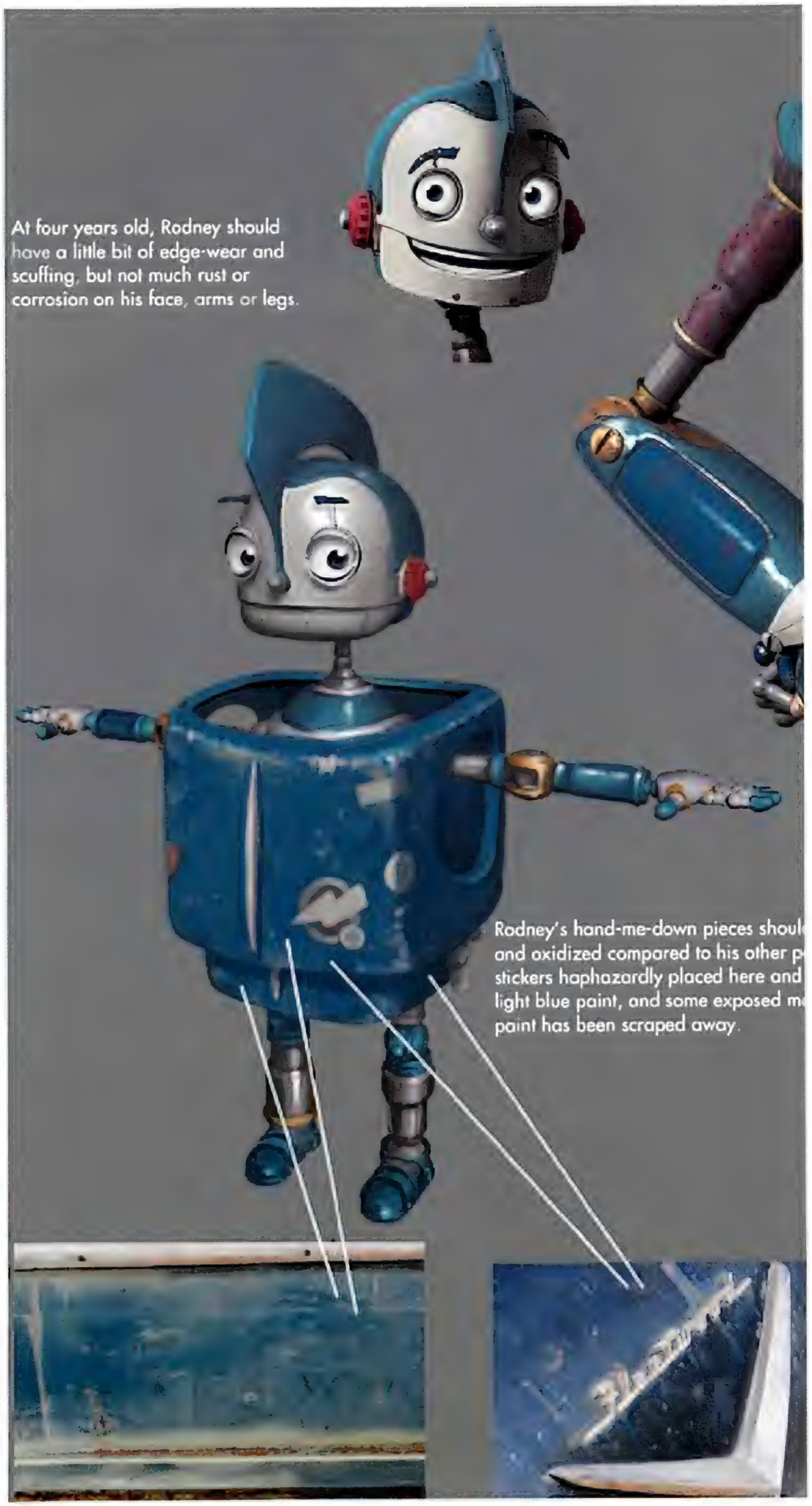
BABY RODNEY & MRS. COPPERBOTTOM
Production Still, 2004



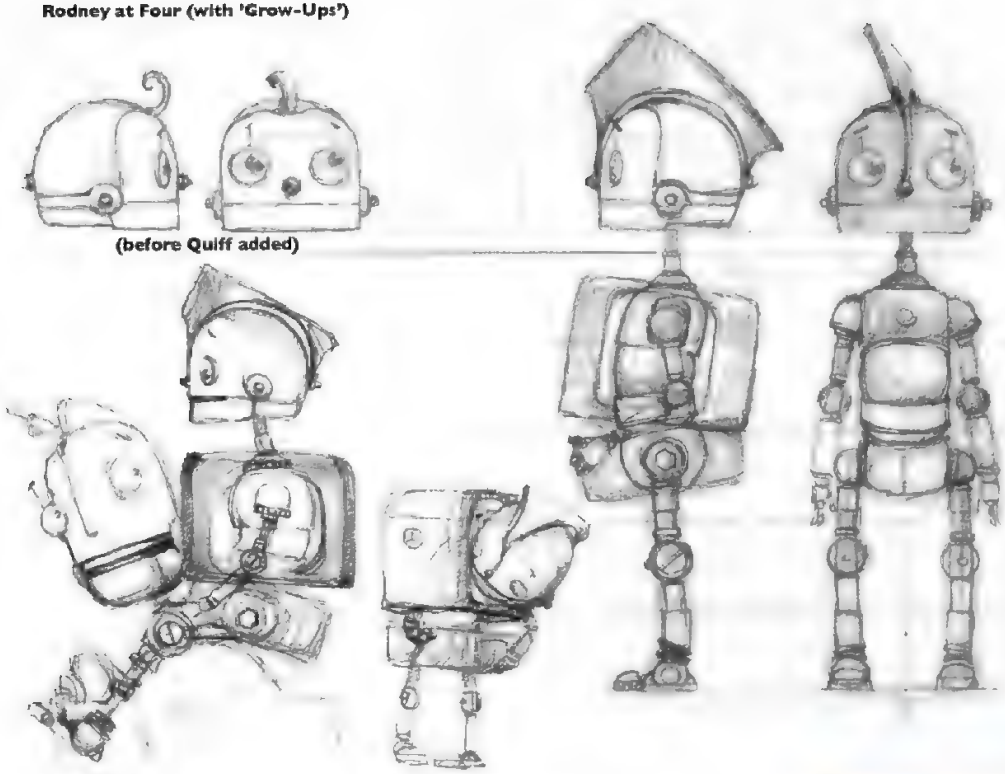
BABY BUTT
Design by Greg Couch, CG Model by Doug Letterman, 2003, Radiosity Render



RODNEY
Bill Joyce, 2000, Pencil, 17 x 24



FOUR-YEAR-OLD RODNEY COLOR CALLOUT
Michael Knapp, 7/2003, Digital

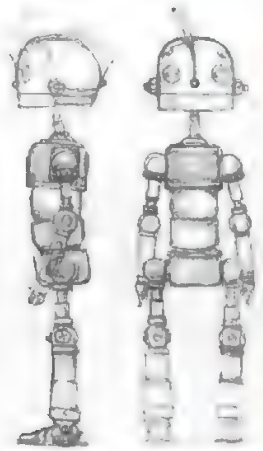


The amount of geometry was the most dramatic hit to the whole pipeline. In *Ice Age* any given scene had two or three dozen pieces of geometry, including characters, whereas *Robots* has thousands. Sid the sloth had forty pieces of geometry, and our Rodney has over four hundred now with all his little parts. The organization of that data was a huge deal for us.

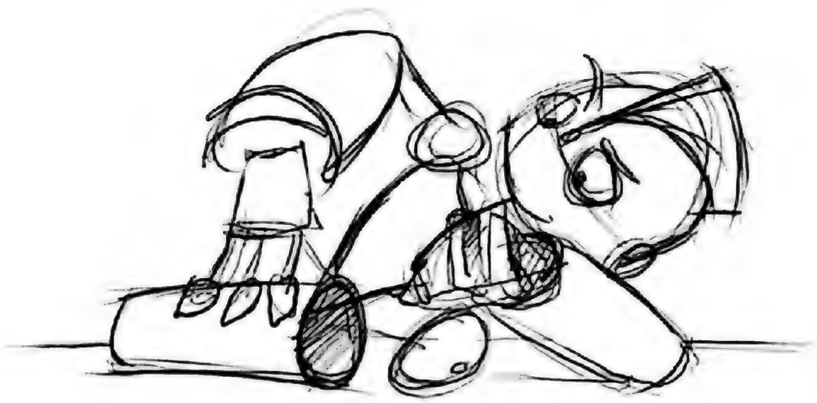
MIKE ERINGIS, MATERIALS LEAD

Left: FOUR-YEAR-OLD RODNEY BREAKOUT
Greg Couch, 7/2003, Pencil, 11 x 15

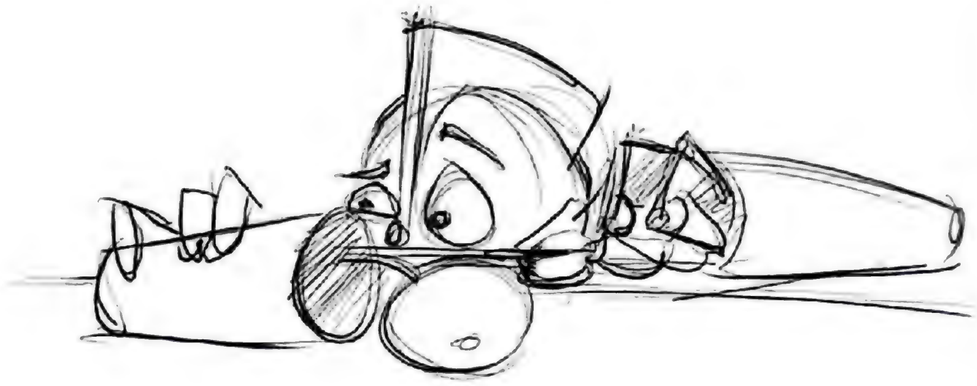
Below: COLOR KEY PAINTING
Dice Tsutsumi, 2003, Digital

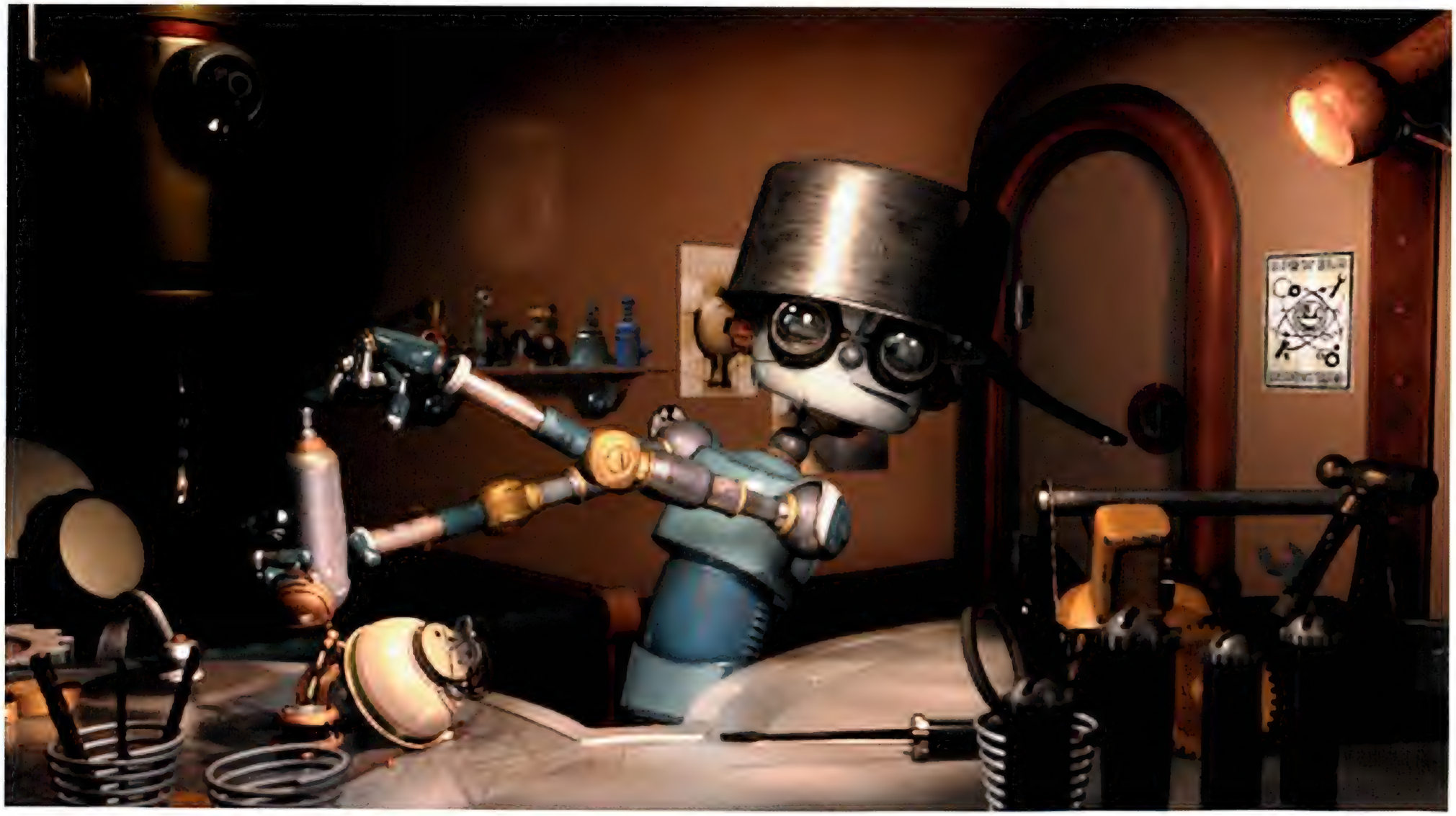


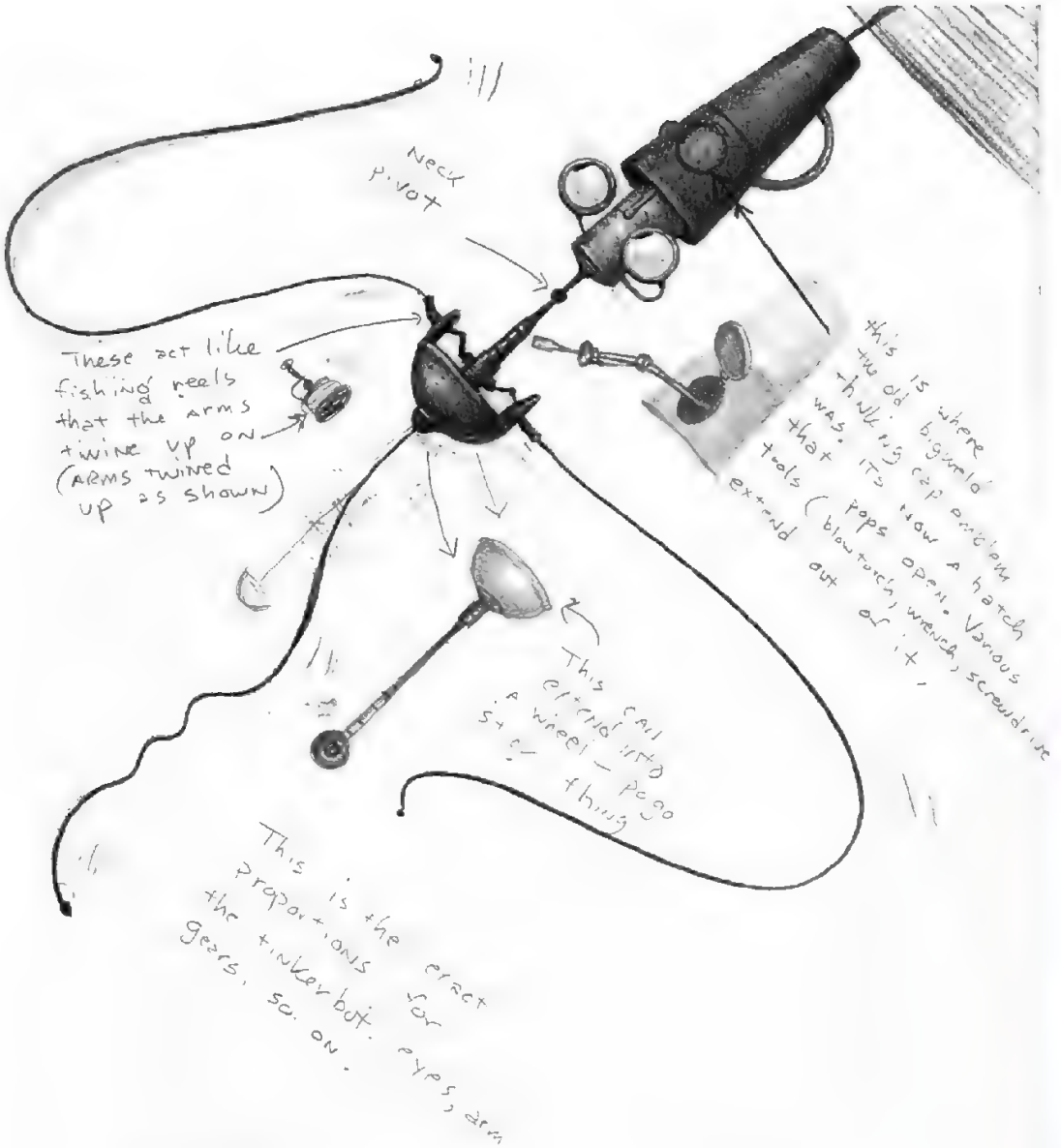
Right: SEVEN-YEAR-OLD RODNEY BREAKOUT
Greg Couch, 7/2003, Pencil, 11 x 15



RODNEY BUILDING THE WONDERBOT
ANIMATION SKETCHES
Mark Behm, 2003, Ink, 8 x 15







Above: WONDERBOT
Bill Joyce, 10/2003, Pencil, 8½ x 11

Opposite: RODNEY BUILDING THE WONDERBOT
Production Still, 2004

Those cable arms are the hardest thing in the world to animate—they're like articulated garden hoses with follow-through, so to get a nice smooth bend you've got to have a million joints in there. Plus they grow and shrink and grab things, so that cable point has to be able to grow more joints to grasp an object, and you have to blend the animation controllers together so you're getting nice arcs. And he's got three arms . . . It gets really complicated.

MIKE THURMEIER, ANIMATION LEAD

The Wonderbot's arms are also a huge challenge for rendering, because they're so thin and they move so quickly that with motion blur they virtually disappear. So in almost every sequence we're tweaking the color of the cable arms, depending on their speed and the background, so they're more visible.

MIKE ERINGIS, MATERIALS LEAD

Right: WONDERBOT
Dice Tsutsumi, 6/2002, Digital

A lead character like Rodney needs to have a broader range of expression than the supporting roles. Rodney has to play to the Rusties and to the villains. He's our main character and our romantic lead. He has to be appealing, and he has to be able to do the comedy and the physical stuff.

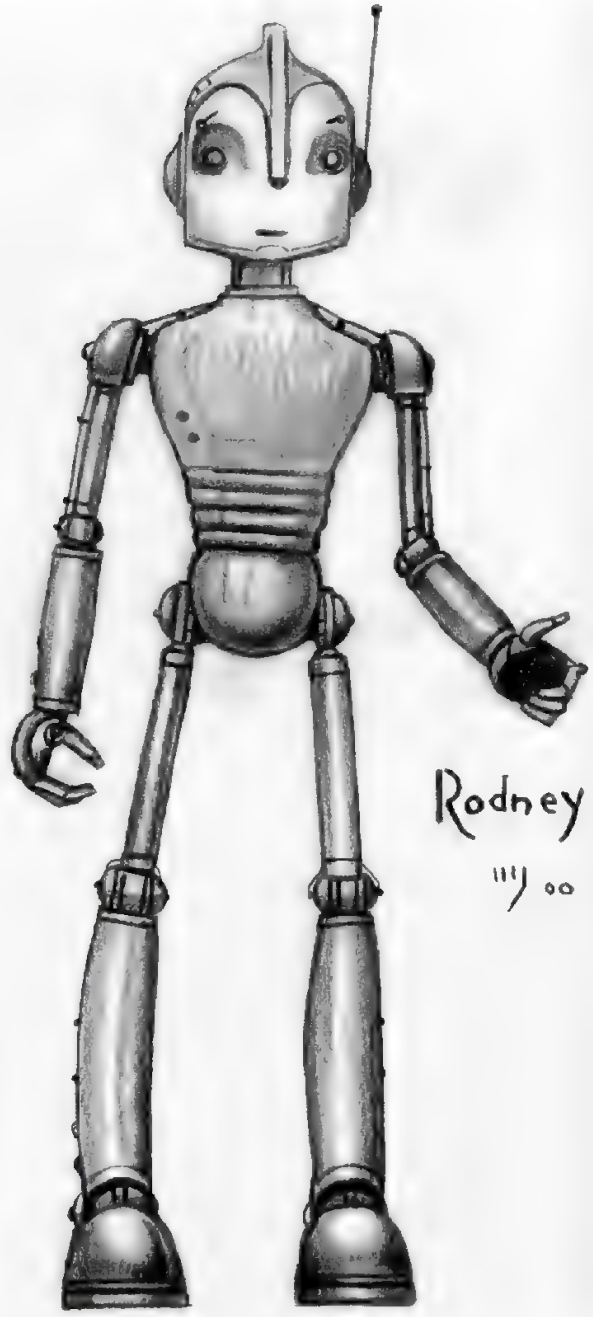
CHRIS WEDGE, DIRECTOR

One thing we pushed to get into the schedule was what we called a 50 percent Modeling Phase. We'd model the character up to a point, but before we finalized the design we'd pass it on to Rigging and Animation. They'd hammer and stretch it, and we'd get answers on whether his legs were too short or too long, or if we needed to extend the neck or not. That became a really valuable step, so it went on pretty much throughout the entire production.

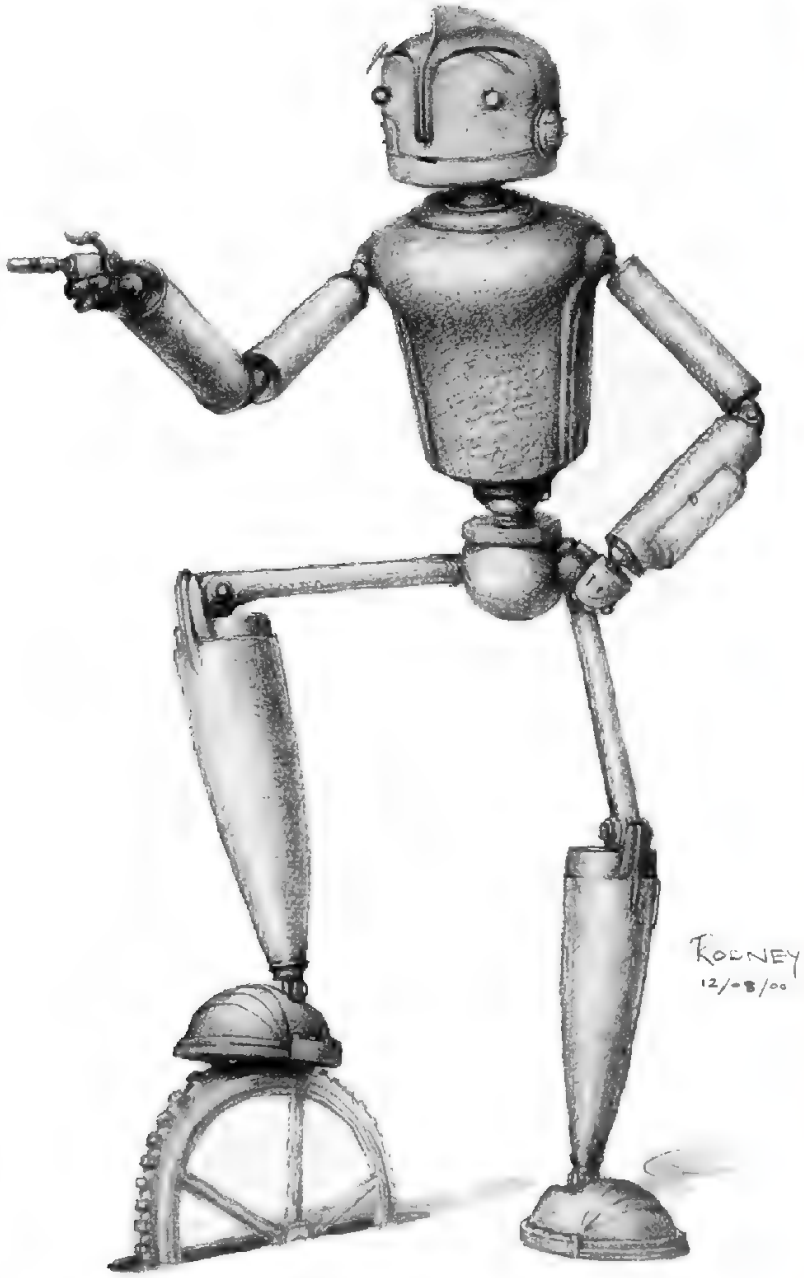
MIKE DEFEO, MODELING LEAD

Above left: ROUND HEAD RODNEY
Design by Peter de Sève,
CG Model by Michael DeFeo, 2002

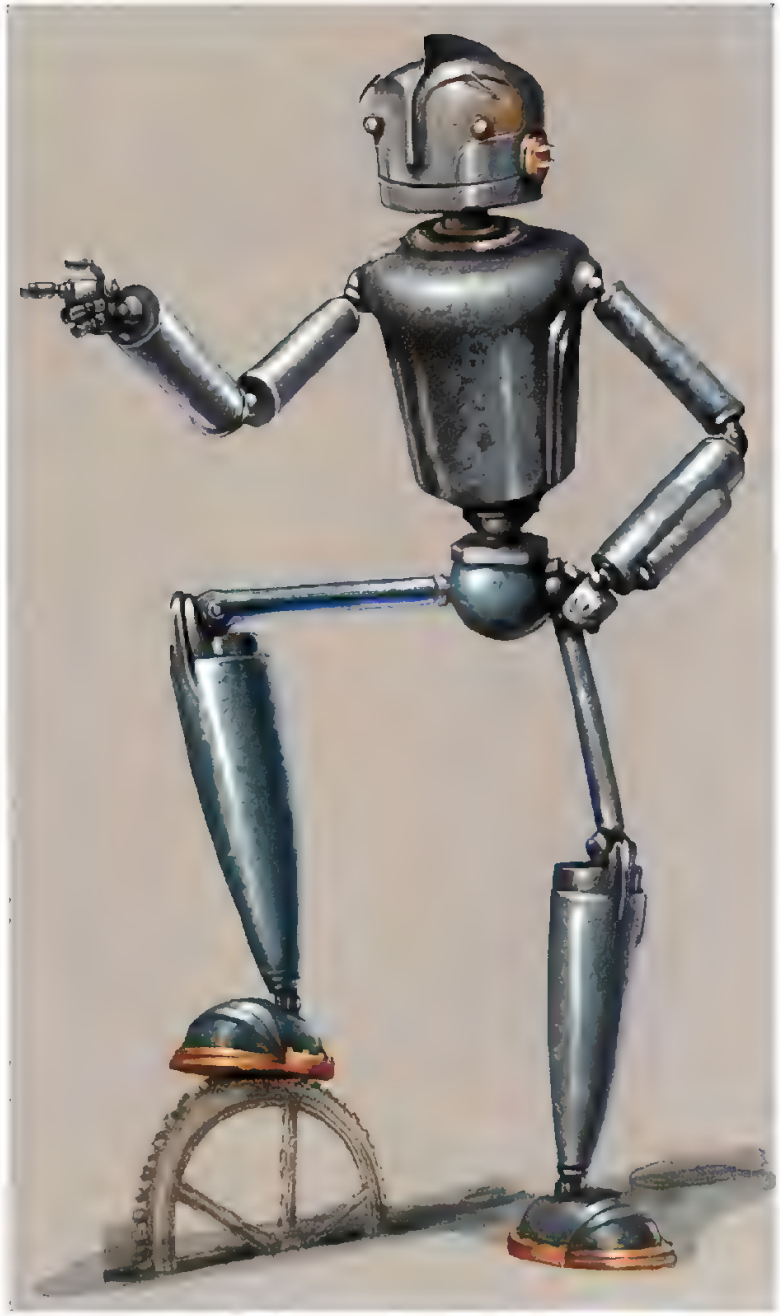
Above right: EARLY RODNEY
Bill Joyce, 2002, Pencil, 10 x 10



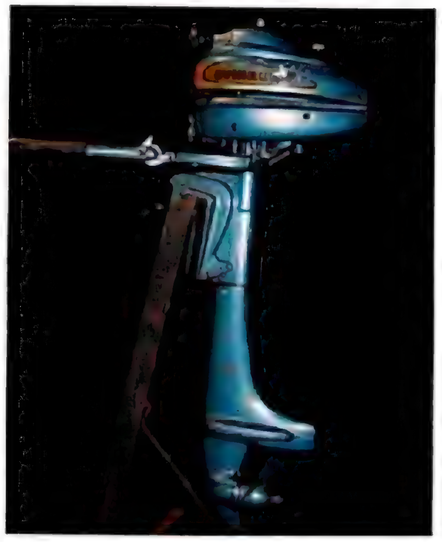
EARLY RODNEY DESIGN
Bill Joyce, 2002, Pencil, 7½ x 10

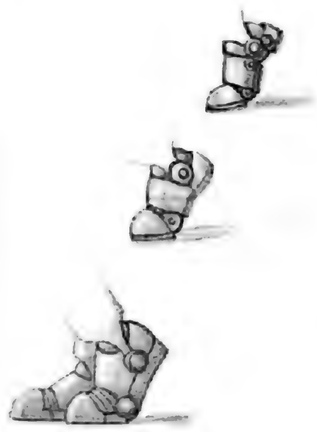


EARLY RODNEY DESIGN
Greg Couch, 12/2000, Pencil, 11 x 17



EARLY RODNEY PAINTING
Michael Knapp, 2000, Digital





I thought Rodney's feet initially had too much of a stocking feel, like the shoes that Robin Hood would wear. So I redrew his feet a lot until finally Chris relented and agreed to my changes. That was almost the only time Chris and I disagreed. We were very in sync on the film, in an almost spooky way.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Peter de Sève came in, and the first thing he did was give Rodney an appealing lanky look. He put more weight in the forearms and ankles and shins, and gave him a flexible thin torso. He's athletic but slender, and a little goofy.

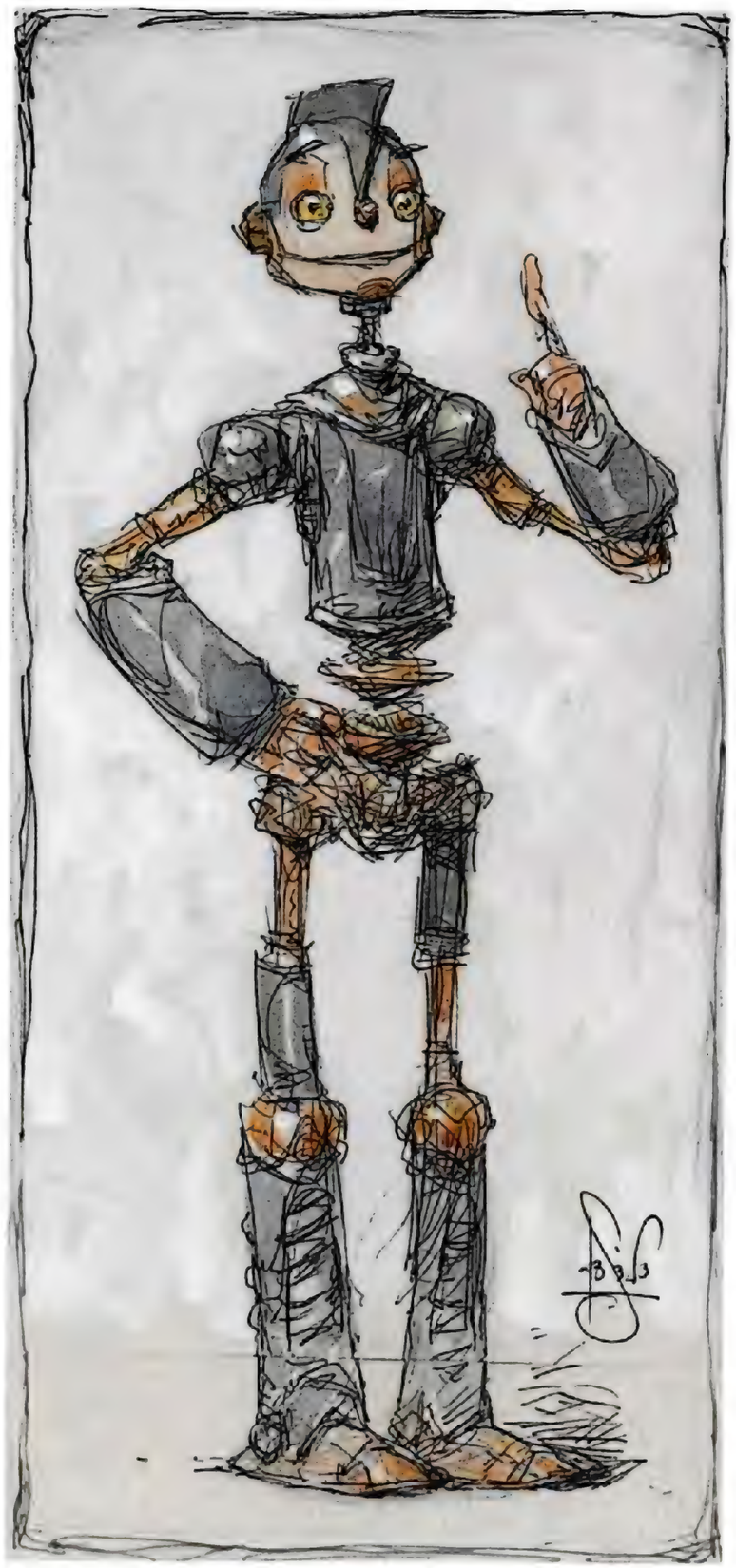
CHRIS WEDGE, DIRECTOR

It was great to have Peter come in with a fresh take. We wanted the drawings to resemble the robot world, and while Peter's drawings were pretty cartoony, we could see Rodney's proportions, and his essence and appeal.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

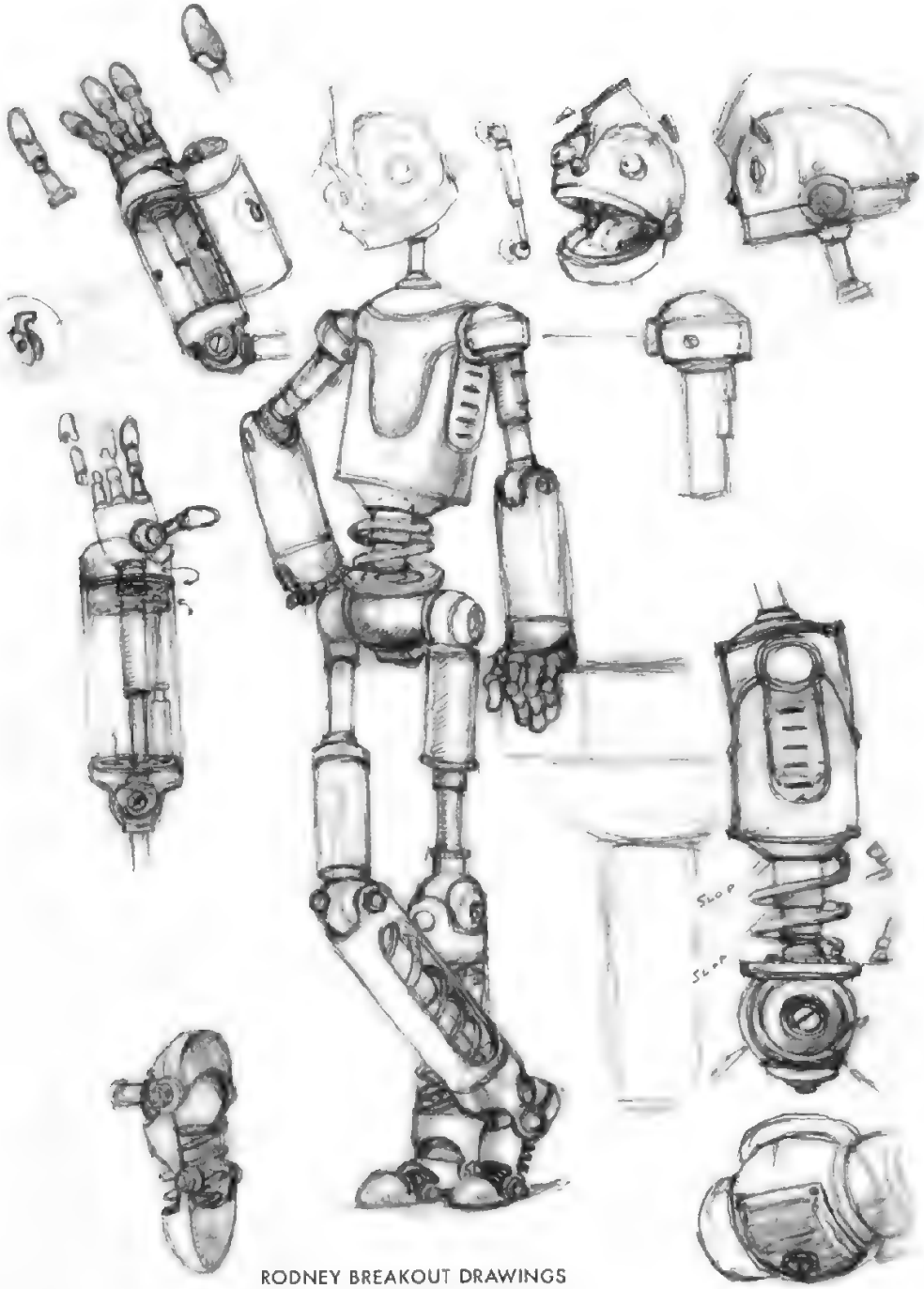
Top left: CHRIS WEDGE'S EVINRUDE MOTOR

Top right: RODNEY'S FOOT DESIGNS
Bill Joyce, 2002, Pencil, 6 x 6



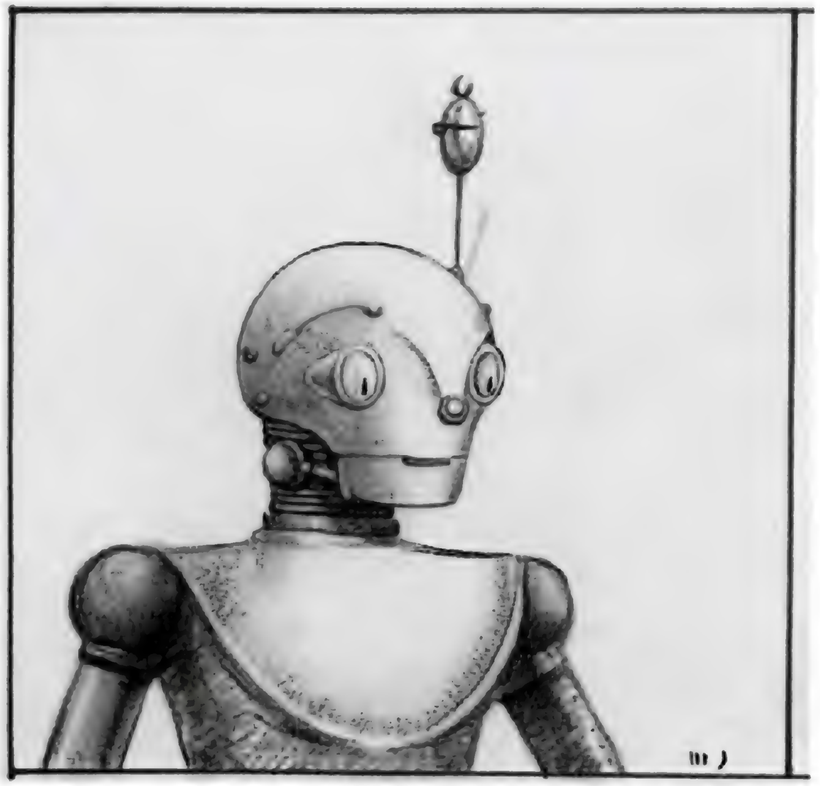
RODNEY
Peter de Sève, 2002, Ink, 6 x 12

RODNEY
Peter de Sève, 2002, Pencil, 6 x 14½

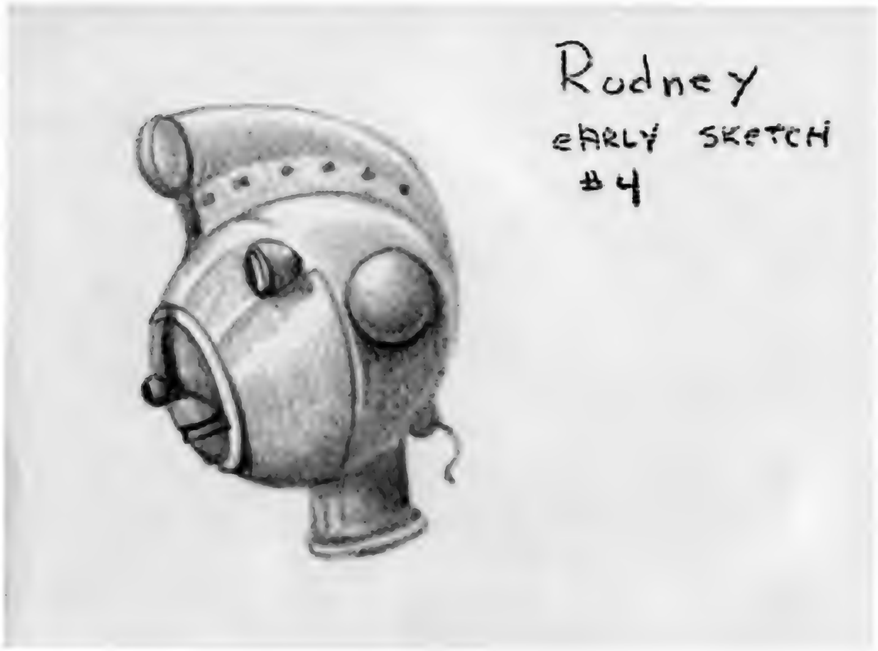


RODNEY BREAKOUT DRAWINGS
Greg Couch, 2002, Pencil, 10 x 15½

RODNEY
2003, Final Render



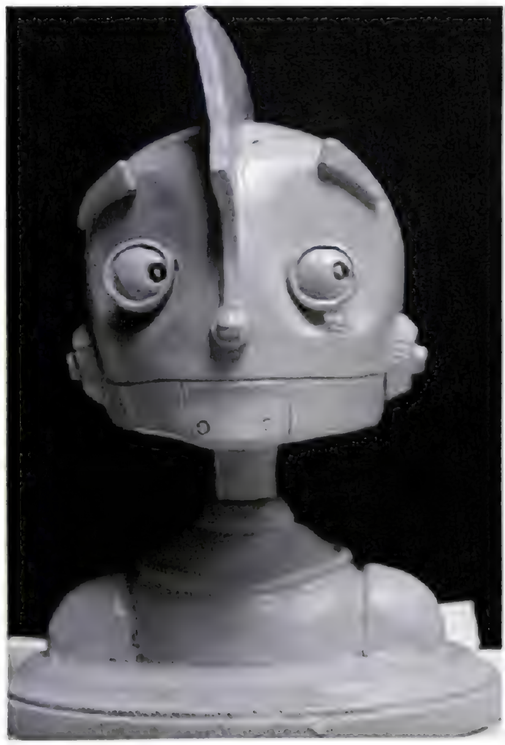
EARLY RODNEY
Bill Joyce, 2000, Pencil, 10 x 10



EARLY RODNEY DESIGN
Bill Joyce, 2001, Pencil, 8 x 10

A new tool we built recently was hairline deformation. We can actually pull Rodney's hairline down a bit. It's subtle but it makes a huge difference—like when Big Weld and Rodney have this moment in the train station where Rodney realizes his childhood hero isn't the guy he thought he was, you can see his face relax like the wind blew out of him. It's not much animation, but if it weren't there, you'd just see this piece of metal sitting there with nothing going on.

MIKE THURMEIER, ANIMATION LEAD



Opposite: RODNEY
Peter de Sève, 2002, Pencil, 7½ x 11

Right: RODNEY MAQUETTE
Michael DeFeo, 10/2002, Super Sculpey,
Approx. 6" tall

THE CITY

RODNEY'S [illegible]RIVAL IN ROBOT CITY
Michael Knapp, 2002, Digital

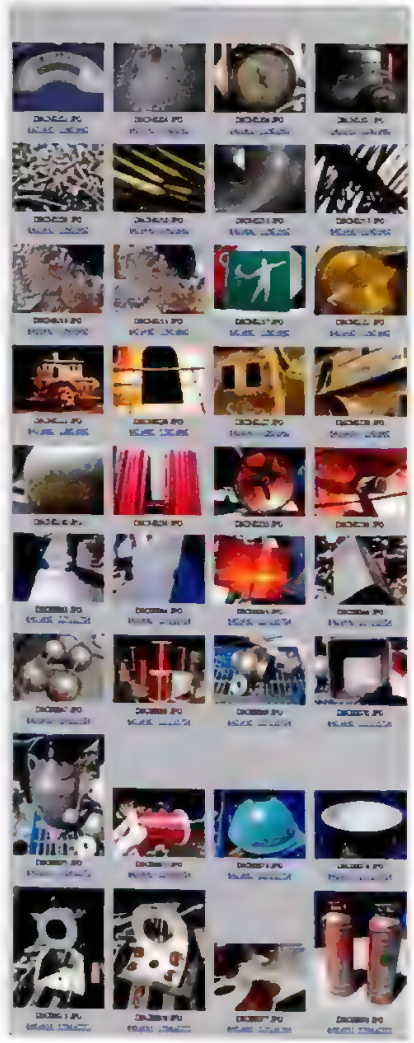
"COFFEE POTS, WAFFLE IRONS, AND MOTORCYCLE ENGINES."

This is how artist Bill Joyce sums up his main visual influences in *Robots*. The typical animated feature takes its design cues from classical painters and illustrators, but from early in *Robots'* development, the Blue Sky designers took their primary inspiration from the anonymous, iconic mechanical designs of the Machine Age. Joyce recalls being influenced by a book he found for the Art of the Motorcycle exhibition at New York's Guggenheim Museum: "There were a lot of close-ups of pieces of the motor and the assembly, and you could find faces and body parts in the photos. It really turned the corner for us." Nudging the artists down this unconventional design path was director Chris Wedge, who brought his grandfather's half-century-old Evinrude outboard motor to a story meeting and announced, "This is our lead character." He was only half kidding; hero Rodney's final shape and color match the motor's to an impressive degree.

Spurred by this approach to designing the characters, Joyce decided that earthly everyday objects were the key to the backgrounds, as well. When we see Rodney arrive in Robot City for the first time, our sense of déjà vu is powerful—in Joyce's background designs, the bric-a-brac of domestic living as we know it are transformed into the sleek architecture of a fantastic urban environment. Chris Wedge says, "The funny thing is that when you watch this movie you're going to be seeing bits and pieces from every household at Blue Sky. One building is my waffle iron. Another is Mike DeFeo's coffee pot."

The design components for the film's land- and cityscapes first came together when Joyce started haunting antique stores and swap meets near his Louisiana home, buying old metal appliances and utensils. Using only these found objects, Joyce assembled a conceptual robot city. "My wife, Elizabeth, came to me and said, 'Bill, I can't find the coffee, sugar, and flour containers. Where's all the stuff from the kitchen?' And I said, 'Um, I'm kind of using them right now, sweetie. Can you hold off for a while?' This model city took up a whole room in my house. It went all over the place."

In the spirit of innovation, however, the artists were careful never to use the objects as originally intended, instead mixing parts and purposes to form new creations, often on a grand scale. Taken out of context and blown up a hundredfold, a saxophone valve becomes an elegant door. Artist Todd Winters found an old art deco



SNAPSHOT OF *ROBOTS'* REFERENCE BROWSER

coffeepot that became the basis for Big Weld Industries' perfectly round headquarters. A piece of a circuit breaker inspired the distinctive look of Diesel, one of the Rusties.

One real-world object went beyond merely influencing the shape of a character or edifice and ended up helping to define the entire concept for Robot City. The discovery of a magazine ad picturing a pocket watch with the back taken off to reveal its inner mechanisms proved to be a key moment in the film's development. Joyce recalls, "Up until that time, Robot City had been looking very Hugh Ferris, 1930s-style *Metropolis*-like, and there was a little grinding dissatisfaction in the back of our minds that this wasn't cool enough." Seeing that watch helped the Blue Sky crew crystallize the concept of Robot City as a working machine, where whole neighborhoods are housed on giant gears and everything functions interconnectedly. They created a vertically layered city, like the inner workings of a watch, a design that was then exploited for dramatic effect in sequences like Rodney's ride on the Crosstown Express, where he travels from the unpolished Steam-era depths all the way up to the sleek metallic buildings at the apex of modern Robot City.

Found objects were again the reference when it came to developing materials and textures. Extensive lists of materials callouts were created to show how various metals should be textured, aged, and otherwise nuanced. A sleek Shimano fishing reel that Modeling Lead Mike DeFeo found while vacationing helped the artists form the design vocabulary for the High-End parts of Robot City. Art Director Steve Martino explains: "The reel seemed to have a very limited palette in terms of color values and hues, and a simple structure, but upon closer observation, we realized there were all these different alloys and anodized metals and that the metals were brushed and put together in complex ways."

Materials Lead Mike Eringis, who for a time kept Wedge's Evinrude motor in his office—and who jokingly says he grew so attached to the motor that he would take it out for lunch—explains that the outboard motor aided the materials crew in other unexpected ways. "It helped us realize that it is the curvature of an object that dictates how paint chips off its metallic surfaces, and where dirt and oil tend to collect over time."

Through their close observations of the myriad and often overlooked physical qualities of real-life objects, not to mention their ability to perceive a megalopolis in the works of a pocket watch, Blue Sky's designers built a city of robots that's strongly familiar as well as strangely fantastic. Arguably, all designers raid the past for inspiration; on *Robots*, the artists at Blue Sky bagged most of their choicest booty without leaving the garage.

Top: BIG WELD GATES
Bill Joyce, 2002, Pencil, 11 x 11

Bottom: ROBOT CITY MOCK-UP
Bill Joyce, 5/2002, Found Object Composition

A philosophy started to form among us—a nostalgia for a time when things weren't so disposable, when you had your grandfather's Remington typewriter and it still worked. Then we started having word processors and computers and laptops, and suddenly we're in a cycle of tossing stuff out. You used to need just *the* typewriter, and you'd keep it forever and develop a connection to this inanimate object. Sometimes it was so simple you could fix it yourself. Now if it busts, we chuck it and get another one, and it's going to be obsolete in six months anyway.

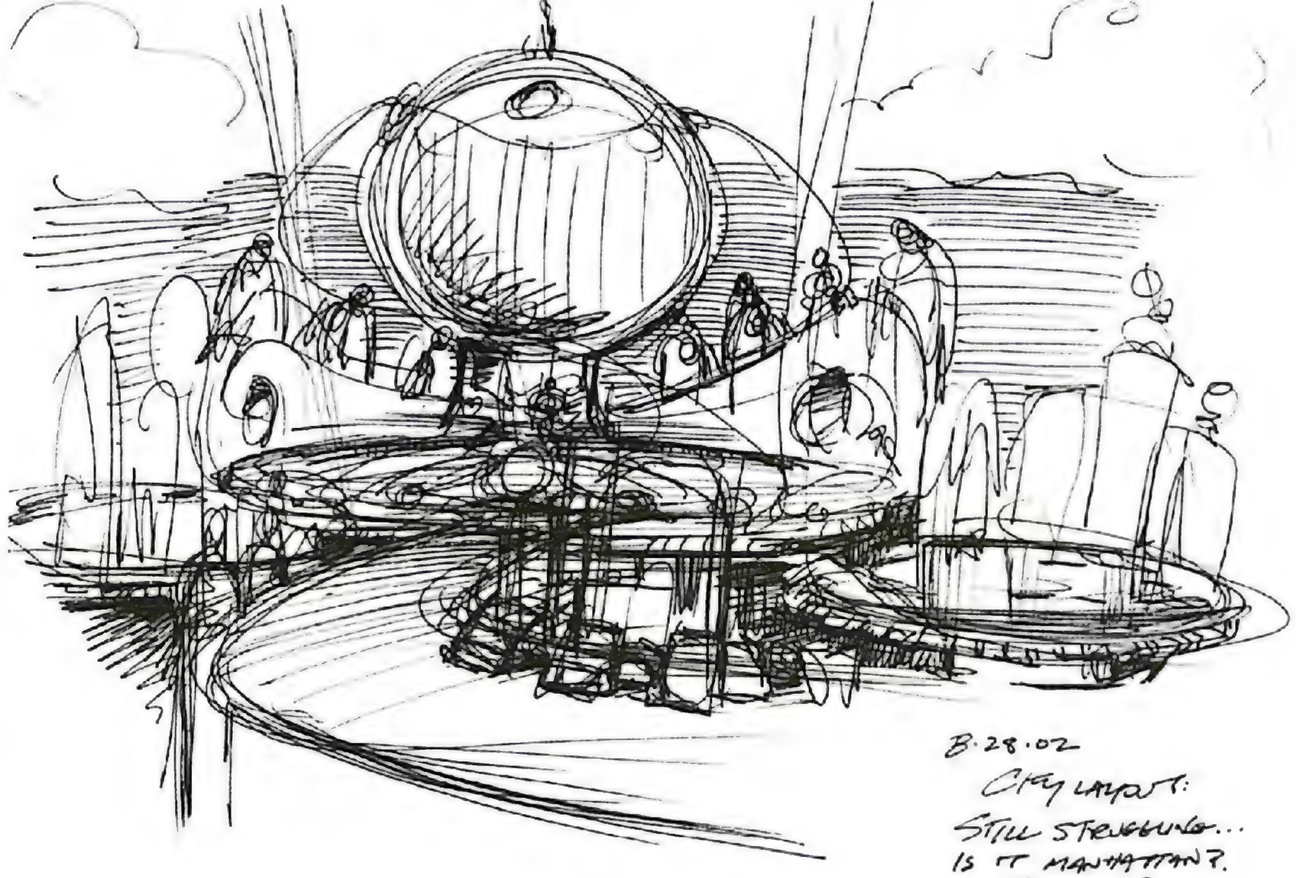
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Older objects were engineered, created and cared for in a way that we don't think about objects today. That's part of the movie's theme: Ratchet's plan for the world is creating things that people have to upgrade continually. We all kind of laugh at the fact that it's happening right now with our computers. The USB or Firewire connections change so often you have to upgrade just to keep up. As we designed the film we gravitated back to a period when objects weren't built that way, which embodies Big Weld's ideas of making things that really work to serve the people.

STEVE MARTINO, ART DIRECTOR

Chris Wedge and I talked a lot about cars. I'd restored an old Cadillac and he'd been working on this VW Bug. You open the hood of those things, and there's the carburetor, which is the most complicated thing in the whole engine. You open a car now, and it's encased in a cocoon of technology, and you can't get to anything and you don't know how it works. So we had a sympathy for the simplicity of older machines. That had every kind of effect on the design.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

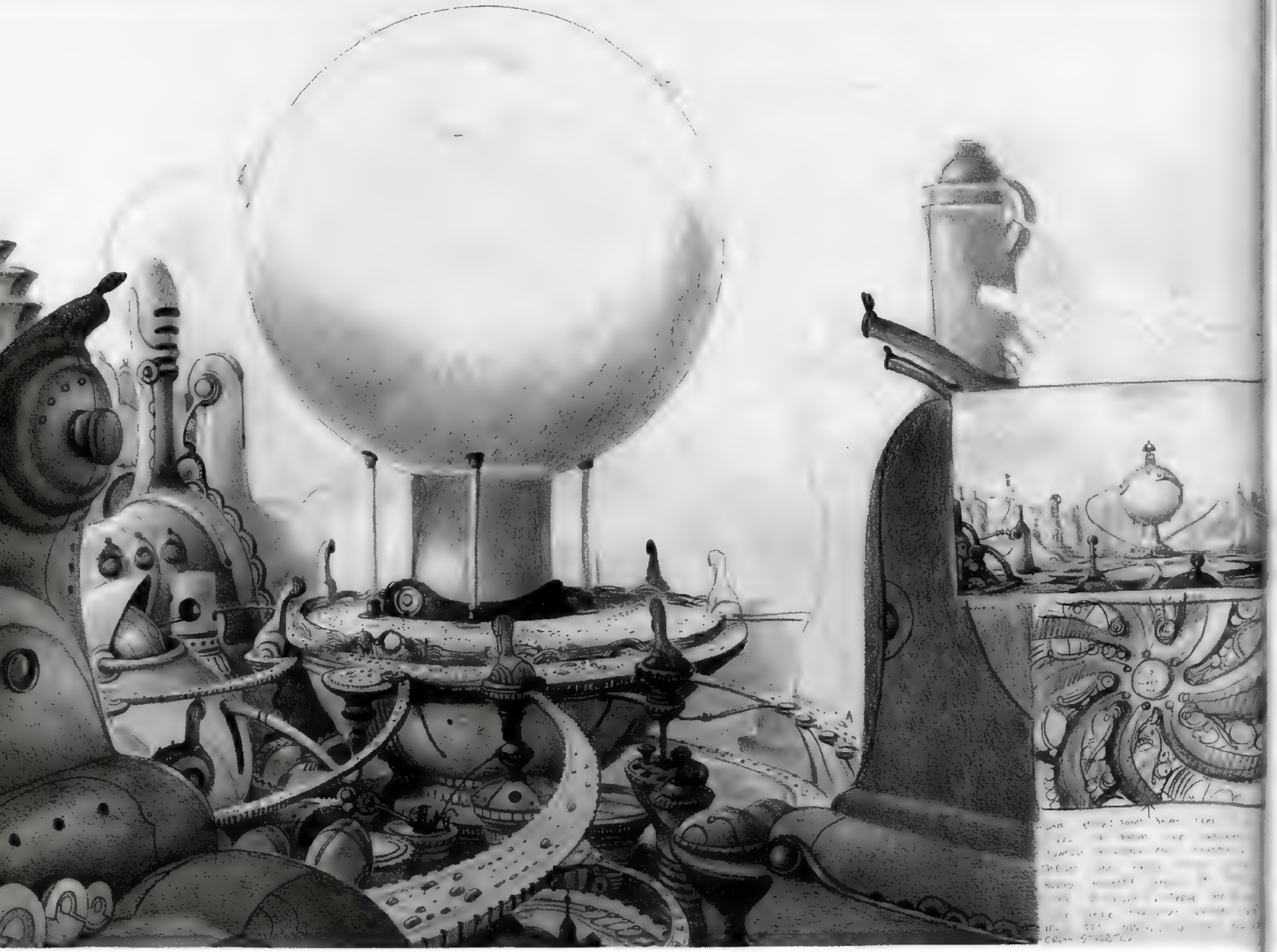


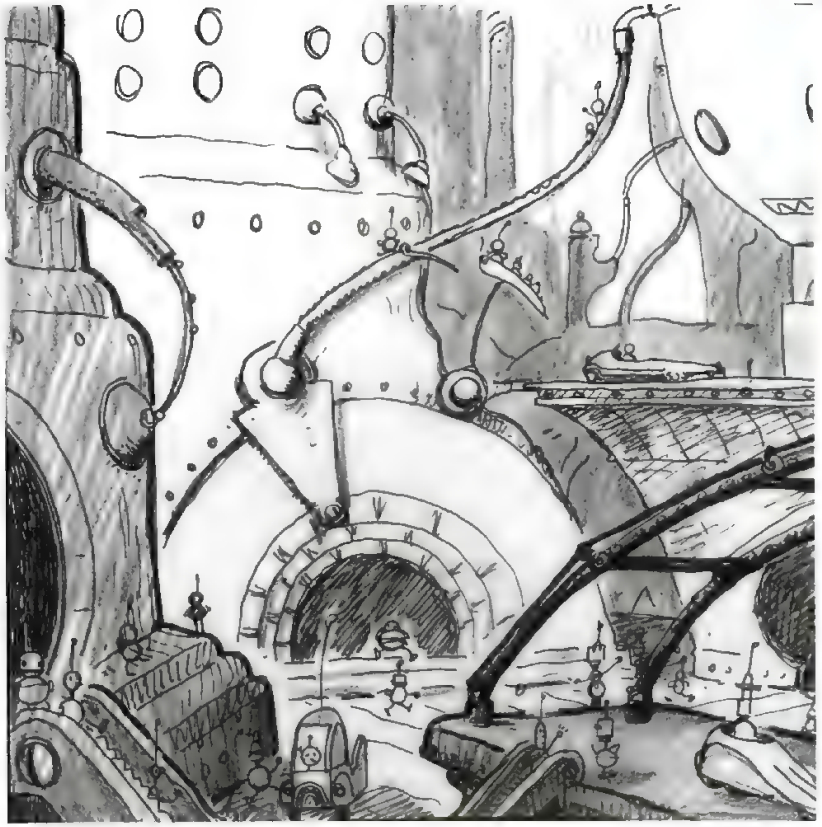
Top: ROBOT CITY SKETCH
Steve Martino, 8/28/2002, Ink, 8½ x 8½

Left: BIG WELD'S ROBOT CITY MODEL
Design by Michael Knapp, CG Model by Dan Shimmyo, 2003, Radiosity Render

Opposite: ROBOT CITY MOCK-UP
Bill Joyce, 5/2002, Found Object Composition

Right: ROBOT CITY MOCK-UP
Bill Joyce, 5/2002, Found Object Composition





STREET DESIGN
Bill Joyce, 2000, Pencil, 11 x 11

CITY SQUARE
Michael Knapp, 2002, Digital

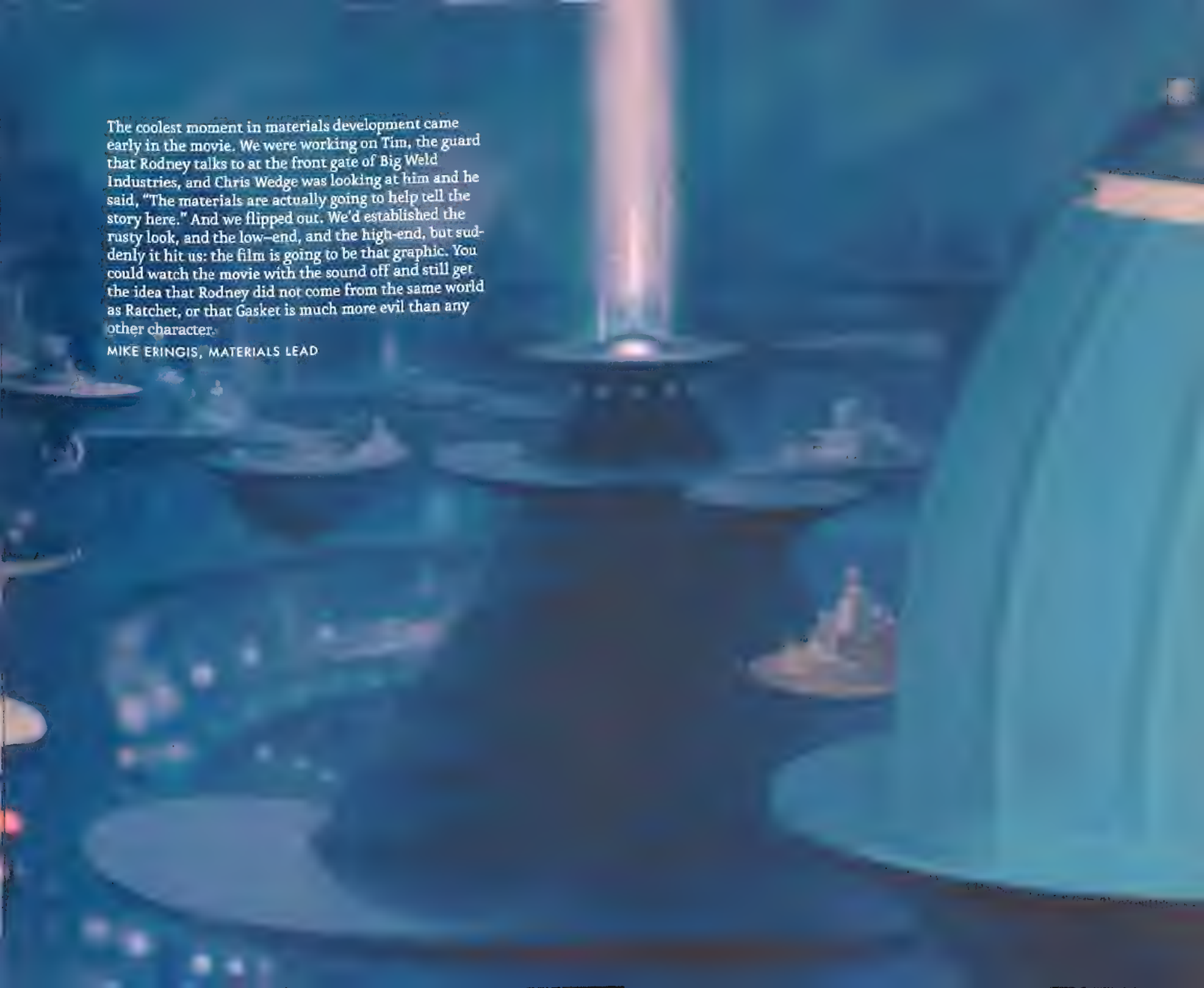
We very specifically moved away from the streamlined look because it felt too familiar. We love that, but we wanted the world to feel familiar and alien simultaneously. In our imaginations we started moving to a place that was much more Rube Goldberg. Robot City is a living machine where everything is interconnected, so if something goes wrong here it's going to affect the whole works. We kept saying Rube Goldberg, but I found this English guy named W. Heath Robinson, who actually predates Goldberg, and his gadgets are much more entertaining and elaborate and silly.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Opposite: BIG WELD INDUSTRIES/PLAZA
Bill Joyce, 2002, Pencil, 36 x 24

Pages 50–51: ROBOT CITY AT NIGHT
Greg Couch, 2002, Digital

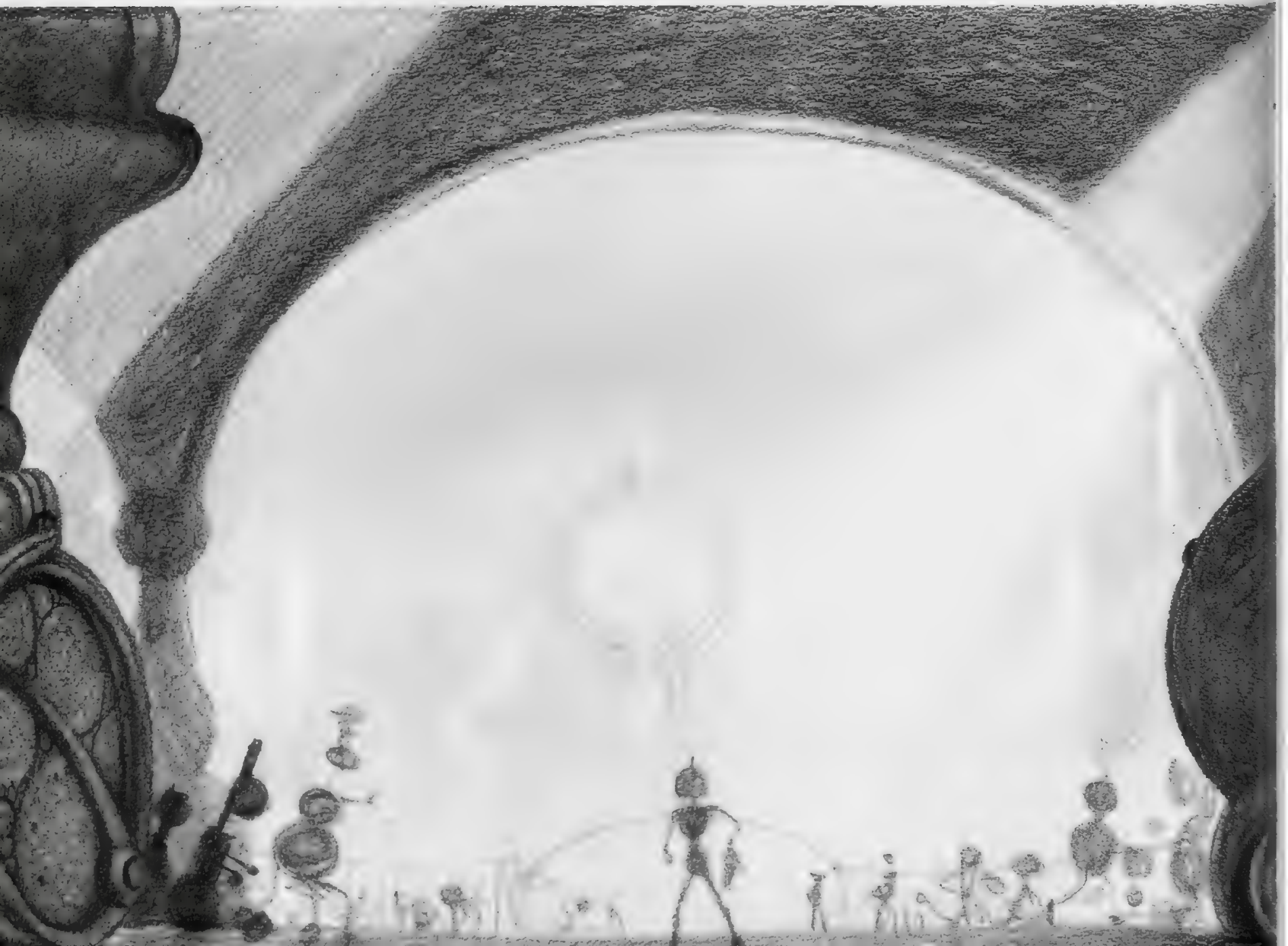
Pages 52–53: ROBOT CITY AT NIGHT
Greg Couch, 2002, Digital



The coolest moment in materials development came early in the movie. We were working on Tim, the guard that Rodney talks to at the front gate of Big Weld Industries, and Chris Wedge was looking at him and he said, "The materials are actually going to help tell the story here." And we flipped out. We'd established the rusty look, and the low-end, and the high-end, but suddenly it hit us: the film is going to be that graphic. You could watch the movie with the sound off and still get the idea that Rodney did not come from the same world as Ratchet, or that Gasket is much more evil than any other character.

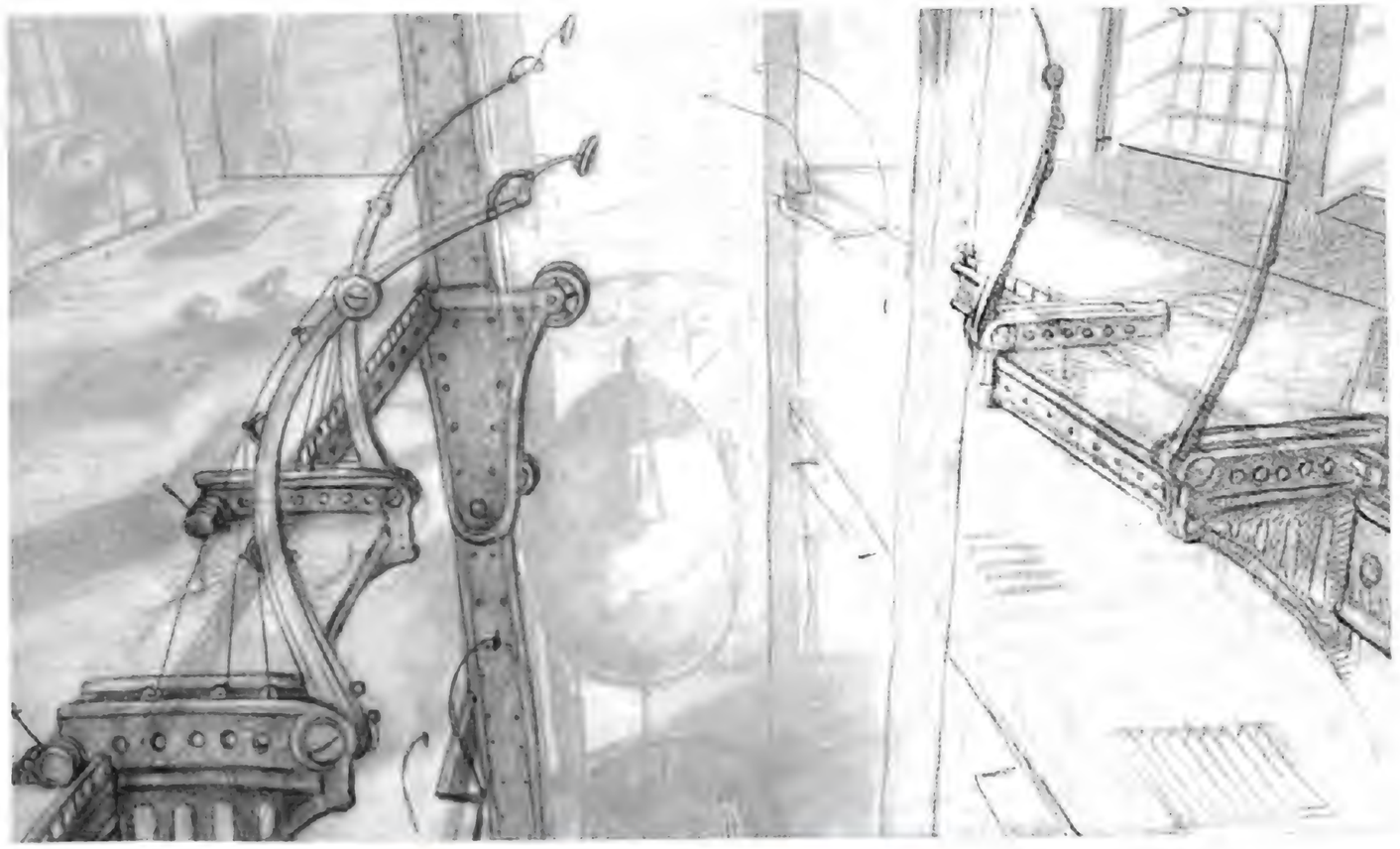
MIKE ERINGIS, MATERIALS LEAD

ROBOT CITY STATION



When Rodney arrives in Robot City for the first time, he rides this giant sky train into what looks like Grand Central Station meets Penn Station meets a dirigible hangar. We figured it was built a long time ago, so it won't be as slick as Robot City downtown. It's like a well-kept old European train station, with lots of girders and exposed metal. We walked around one day looking at nice old hotels in New York, just to see what the patina for the train station might look like. So we're standing in front of the Waldorf and the Plaza just examining the front doors, going, "Look at this! It still looks new but it's been there awhile . . . " I'm sure the doorman was like, "Call Security."

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



The inspiration for the station in terms of atmosphere was Grand Central Station. What was funny was, I went there and took a bunch of pictures, and it's amazing how bland the place actually is. So once our station got to the lighting phase, we beefed it up quite a bit because it turns out Grand Central is actually pretty dark and dingy.

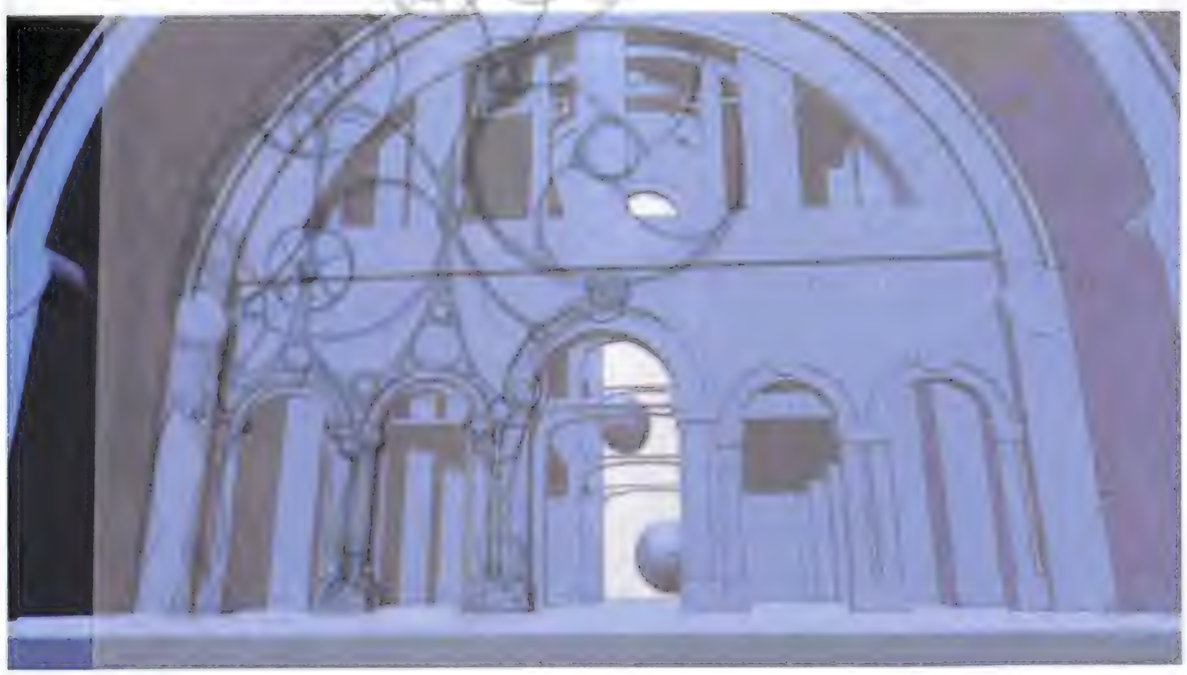
MIKE ERINGIS, MATERIALS LEAD

Above: INFORMATION BOOTH
Daniel López Muñoz, 2002, Pencil, 12 x 14

Top right: STATION DETAILS
Bill Joyce/David Gordon, 11/2002, Pencil, 11 x 8

Right: ROBOT CITY STATION COLOR KEY
Dice Tsutsumi, 2004, Digital

Opposite: RODNEY'S ARRIVAL
Bill Joyce, 10/2002, Pencil, 15 x 10½

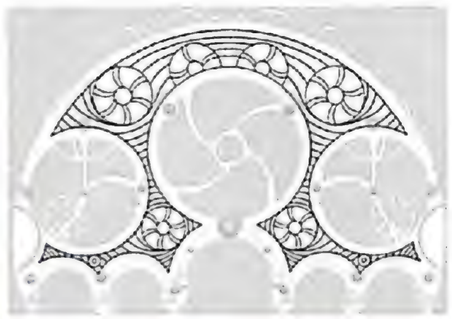


Above: ARCHWAY DESIGN
Bill Joyce, 10/2002, Pencil, 11½ x 8½

Right: ROBOT CITY STATION
Production Still, 2004

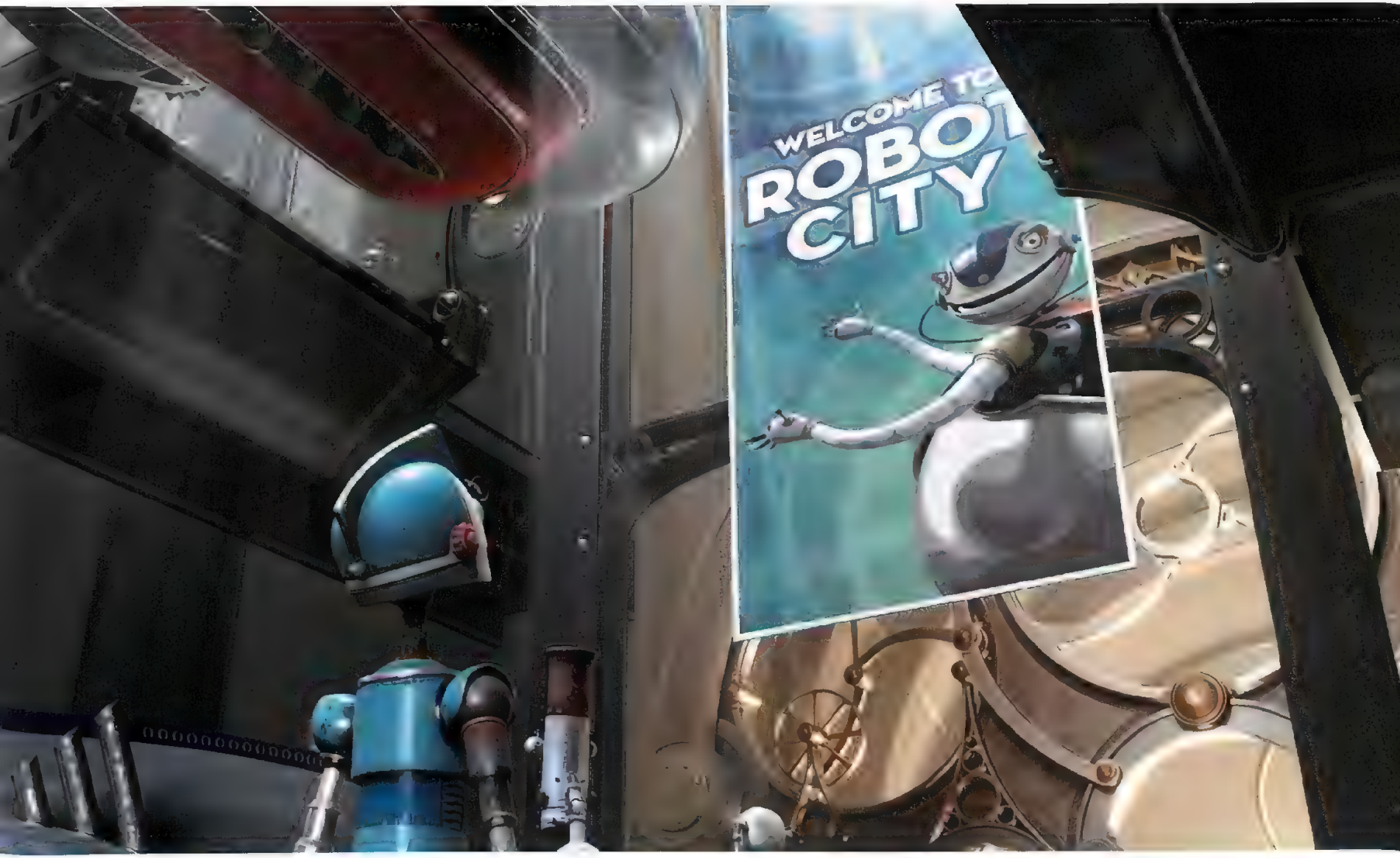
Early on, we were spending as much as a month doing material callouts for the film. Now we know exactly what each kind of material will look like, so people are finishing character and location material callouts in a day or two.

DICE TSUTSUMI, COLOR STYLIST

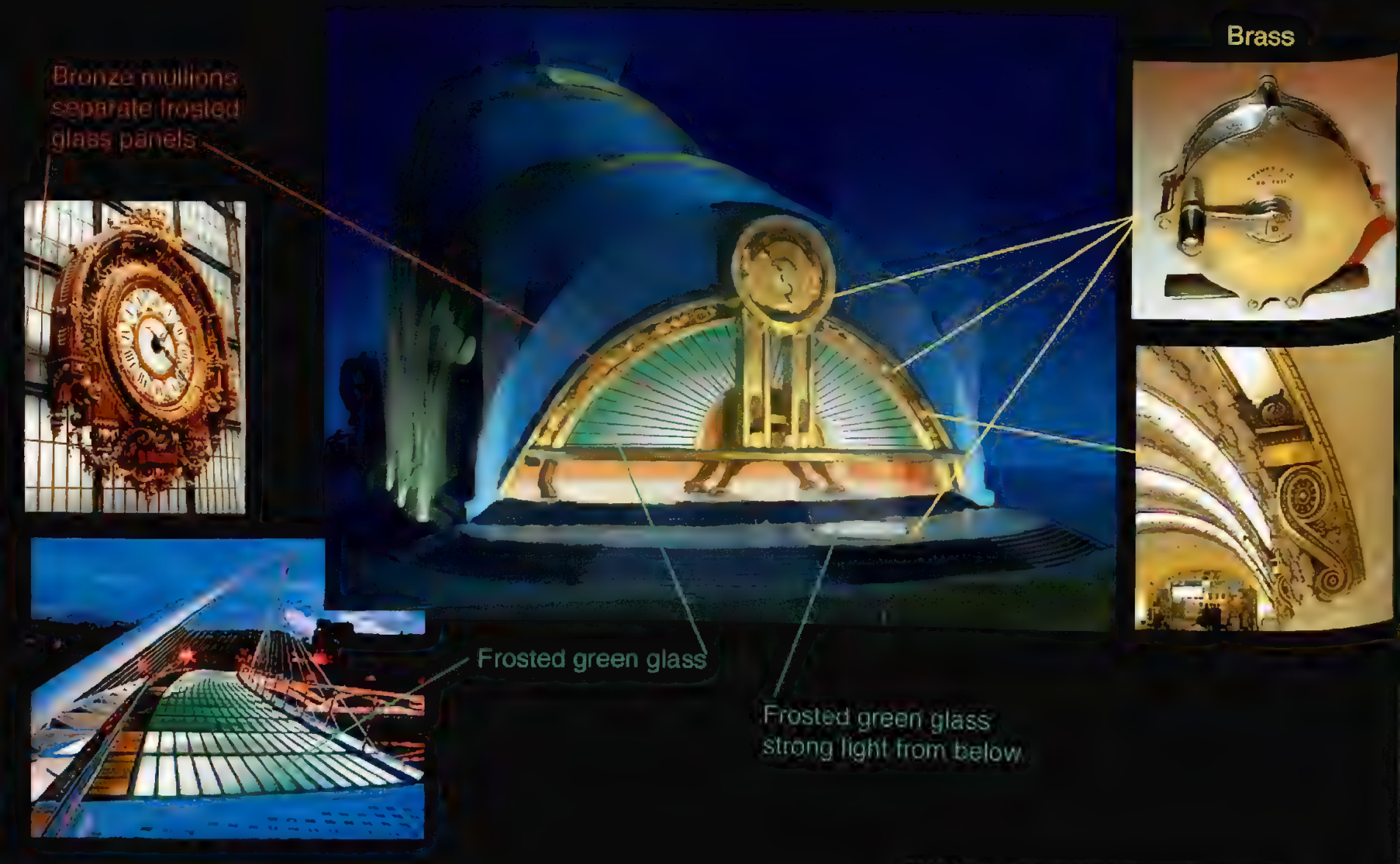


Left: WALL PATTERN
Vincent Nguyen, 2003, Digital

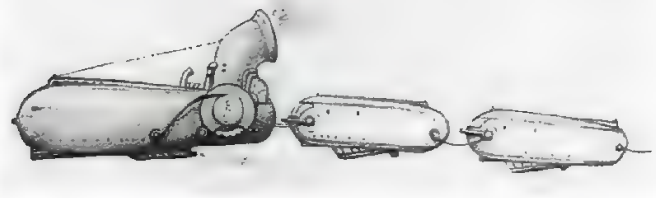
Below: ARCHWAY PRE-VIS MODEL
Jim Gettinger, 12/2002, Maya Render

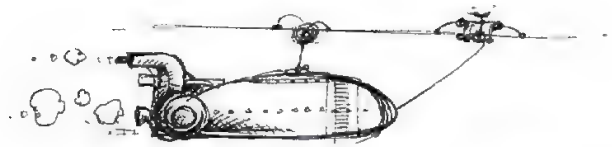


RODNEY ARRIVES AT ROBOT CITY STATION
Production Still, 2004



ROBOT CITY STATION EXTERIOR COLOR CALLOUTS
Thomas Cardone, 2003, Digital

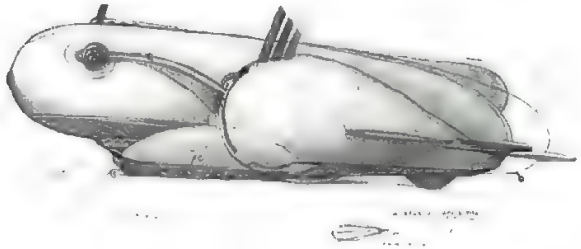


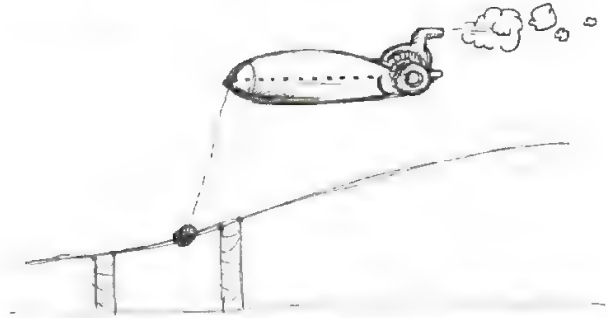


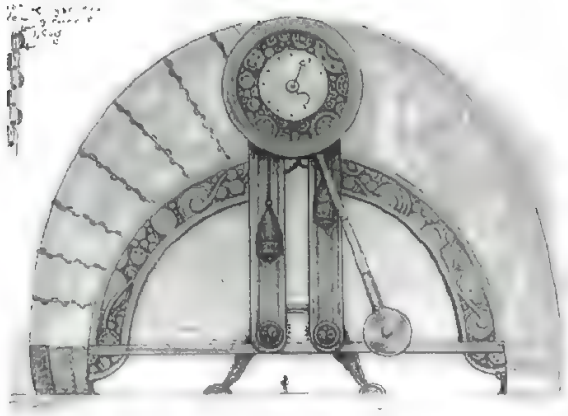
Above: SKY TRAIN
Bill Joyce, 2002, Pencil, 10 x 10

Right: SKY TRAIN
Bill Joyce, 2002, Pencil, 17 x 9

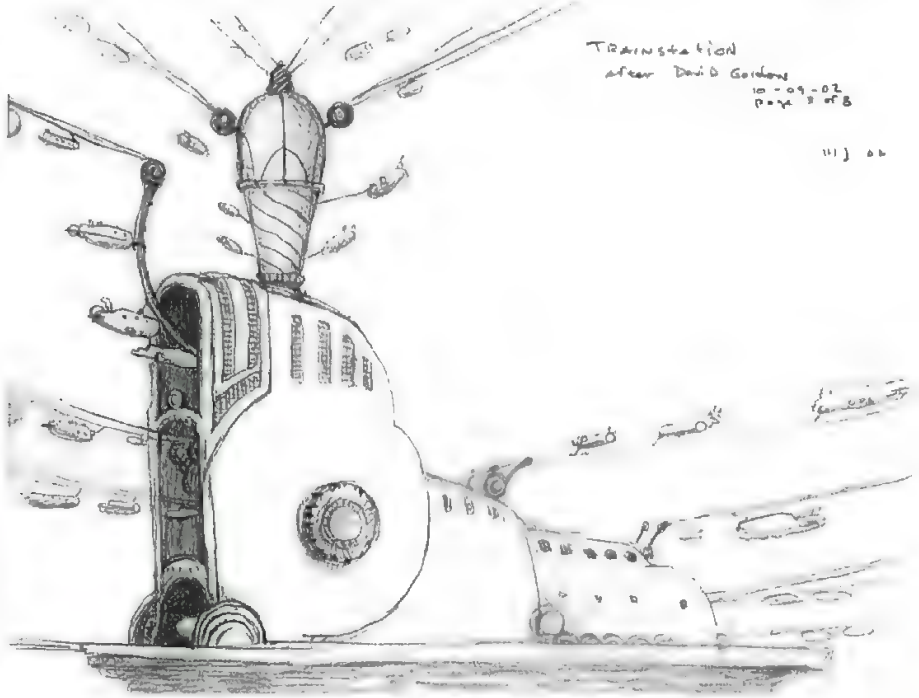
Far right: SKY TRAIN CABLES SKETCH
Steve Martino, 2002, Pencil, 6 x 6



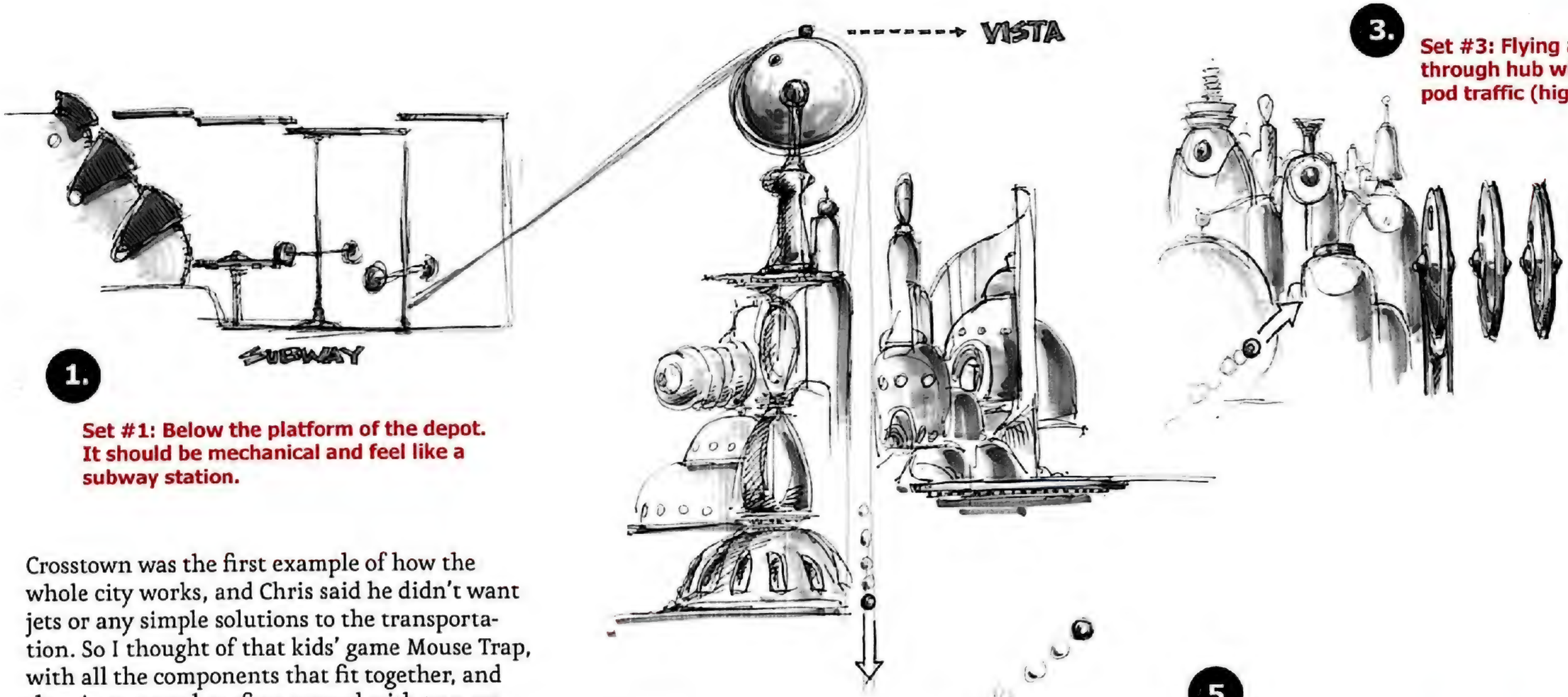




TRAIN STATION CLOCK
Bill Joyce, 2002, Pencil, 14 x 14



ROBOT CITY STATION EXTERIOR
Bill Joyce, 10/2002, Pencil, 8½ x 11



1.

Set #1: Below the platform of the depot. It should be mechanical and feel like a subway station.

3.

Set #3: Flying across the city through hub wheel holes and pod traffic (high-end).

Crosstown was the first example of how the whole city works, and Chris said he didn't want jets or any simple solutions to the transportation. So I thought of that kids' game Mouse Trap, with all the components that fit together, and then just started goofing around with toys we all had growing up. It ended up like a giant Hot Wheels track, but with balls rolling along, and chutes sending you off this way and that, and a catapult. So I would draw individual bits, and then we'd piece them together. It was like building a toy, with only centrifugal force to direct you. The goofier the better. It was a gas. Dave Gordon was an artist working with me, and he'd shoot out thirty rough ideas and I'd go, "Okay, that's cool," and then I'd go further with it. Then Carlos and Chris and everybody would come in and go, "Wouldn't it be neat if . . . ?" We got crazier on this sequence than anything else on the movie.

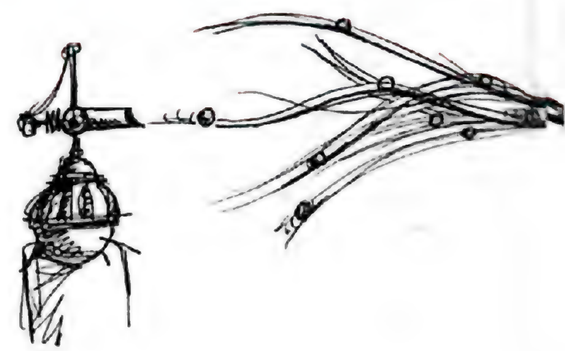
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

2.

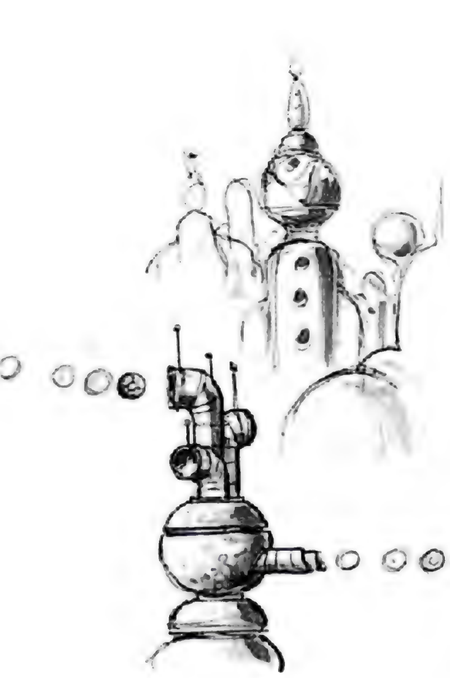
Set #2: Hub wheels and pod launcher (pod launcher is on a tone arm down in the low-end neighborhood).

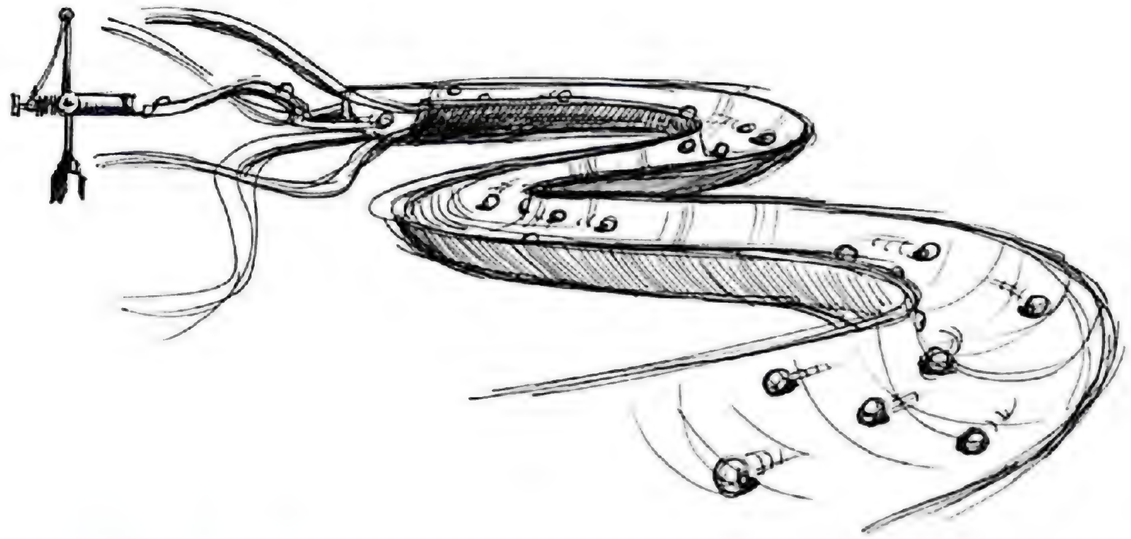
5.

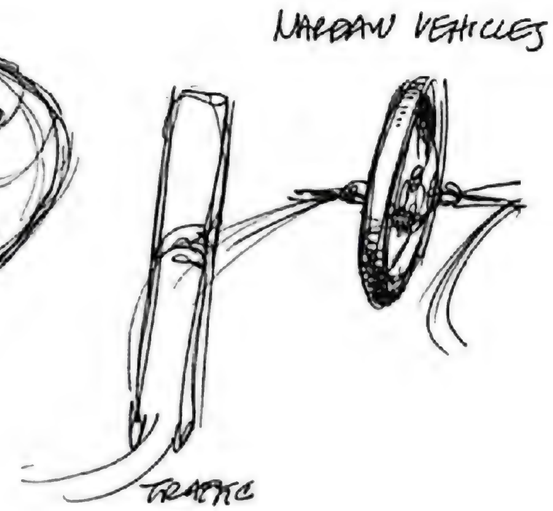
Set #5: Spiral into half pipe with freeway-like traffic, which leads to a tone arm funnel. Through the funnel, down the pivot arms, around a building and into the wheel-o.



CROSSTOWN EXPRESS DIAGRAM
Steve Martino/Carlos Saldanha, 2002, Ink and Marker, 20 x 30

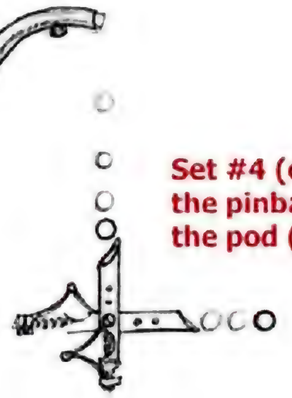




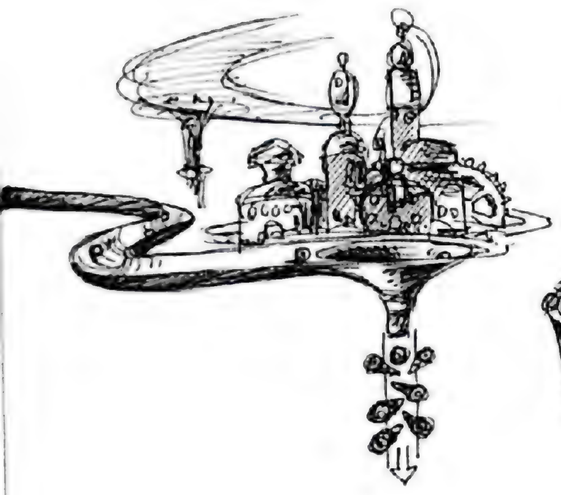


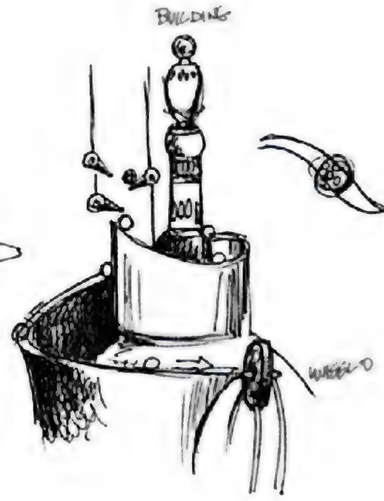
4.

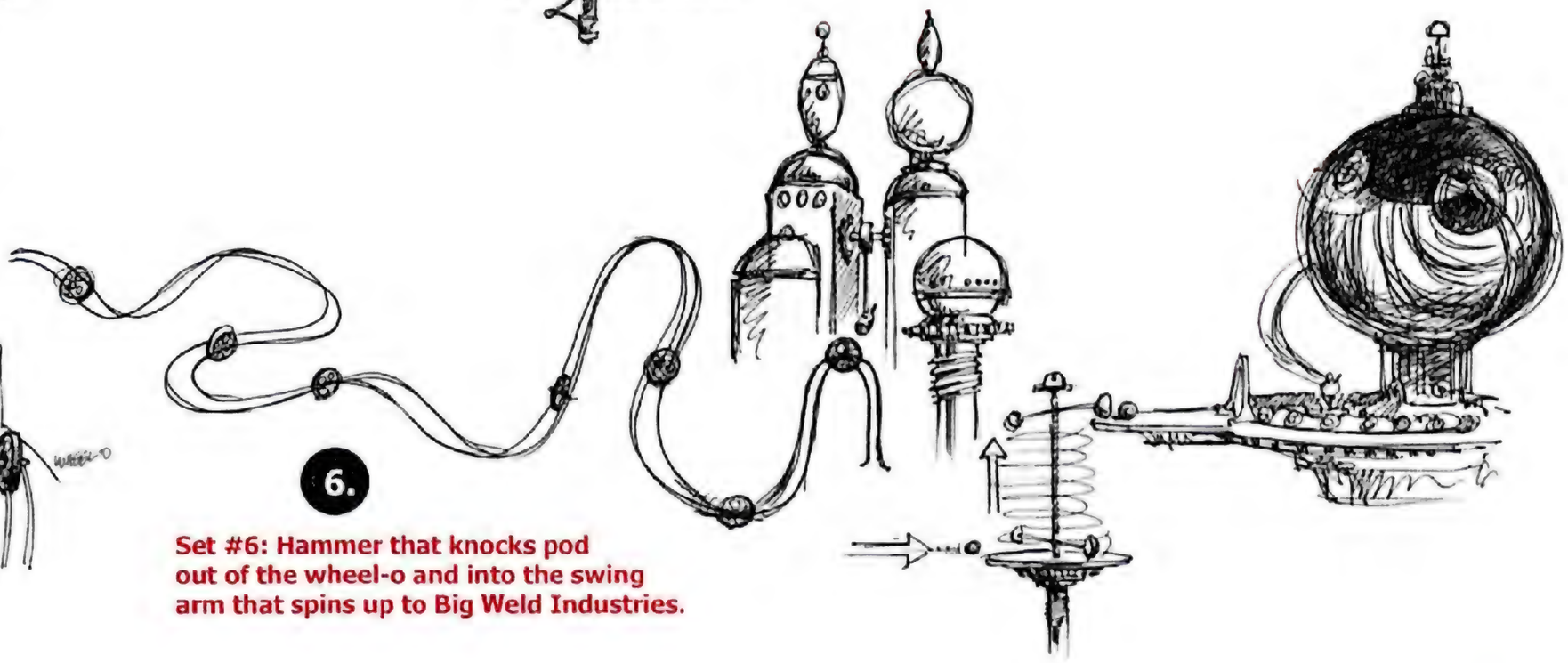
Set #4: Pod catcher building and redirecting pipes that channel the pod through several blocks near Aunt Fan's neighborhood.



Set #4 (cont.): The last device is the pinball launcher, which catches the pod (vertically), rotates and fires.

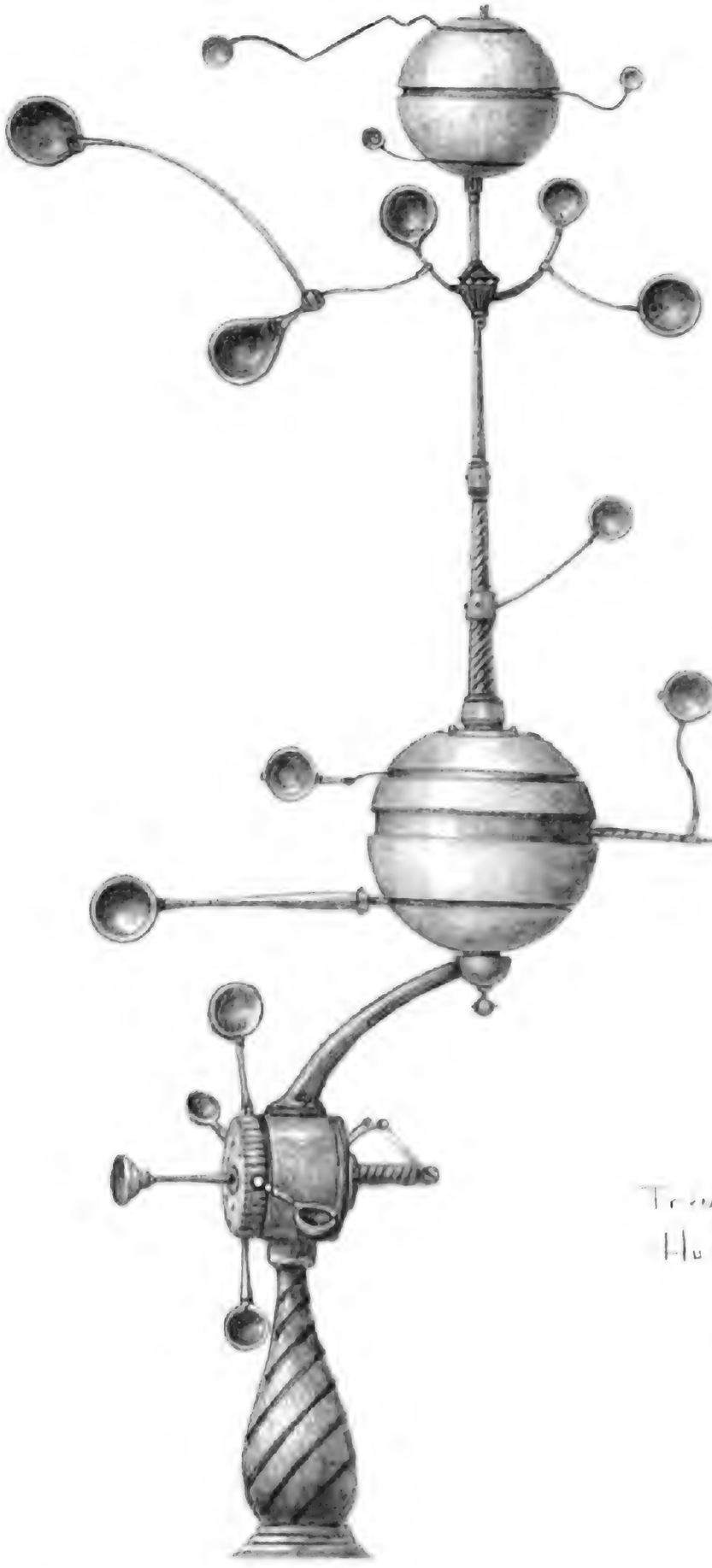


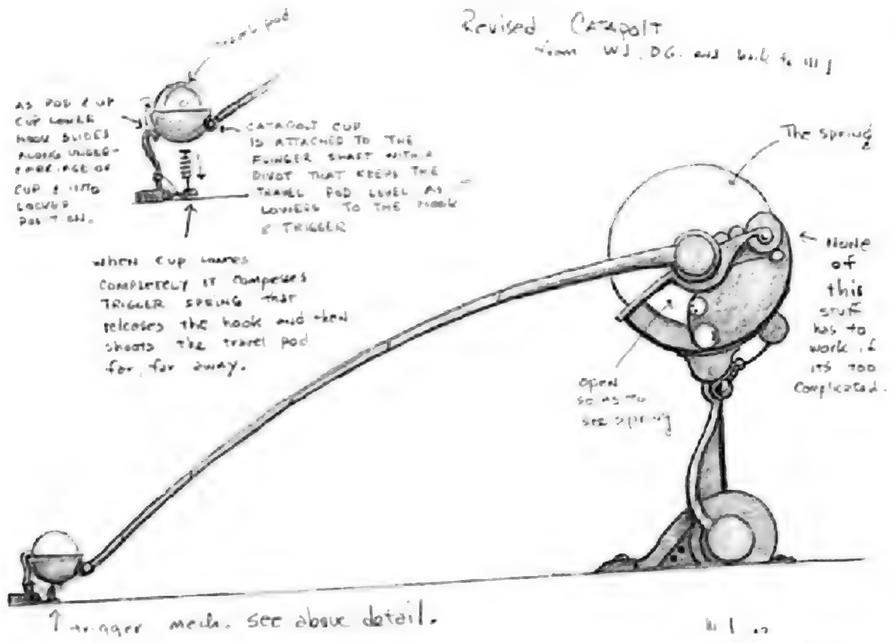


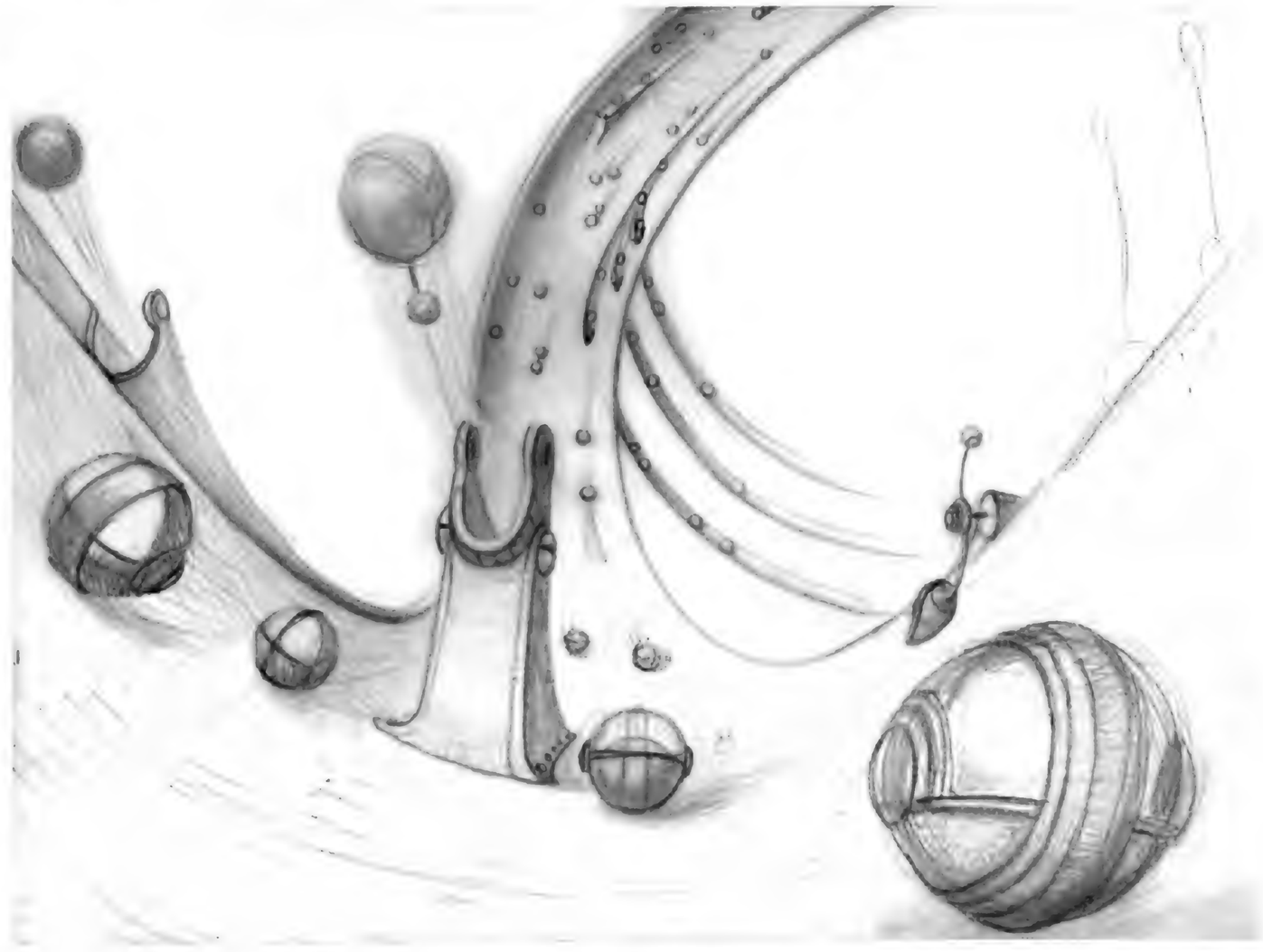


6.

Set #6: Hammer that knocks pod out of the wheel-o and into the swing arm that spins up to Big Weld Industries.



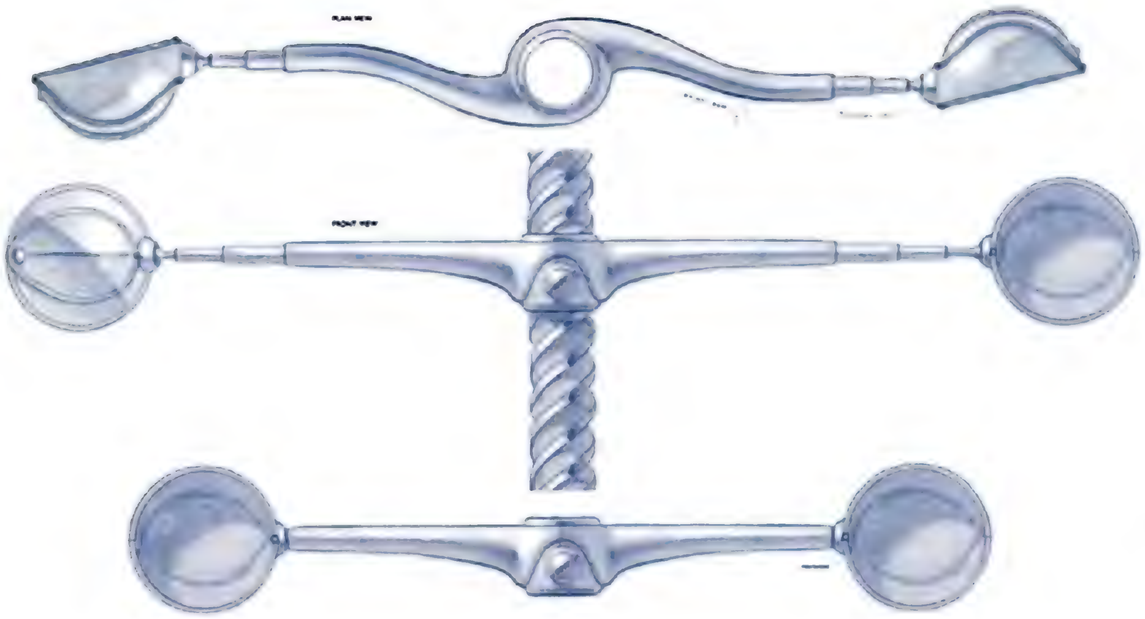




Far left: TRANSIT HUB
Bill Joyce, 2002, Pencil, 17½ x 25½

Left: CATAPULT
Bill Joyce, 12/02, Pencil, 11 x 8½

Below: POD TRAVEL STUDY
Bill Joyce, 2002, Pencil, 11 x 17



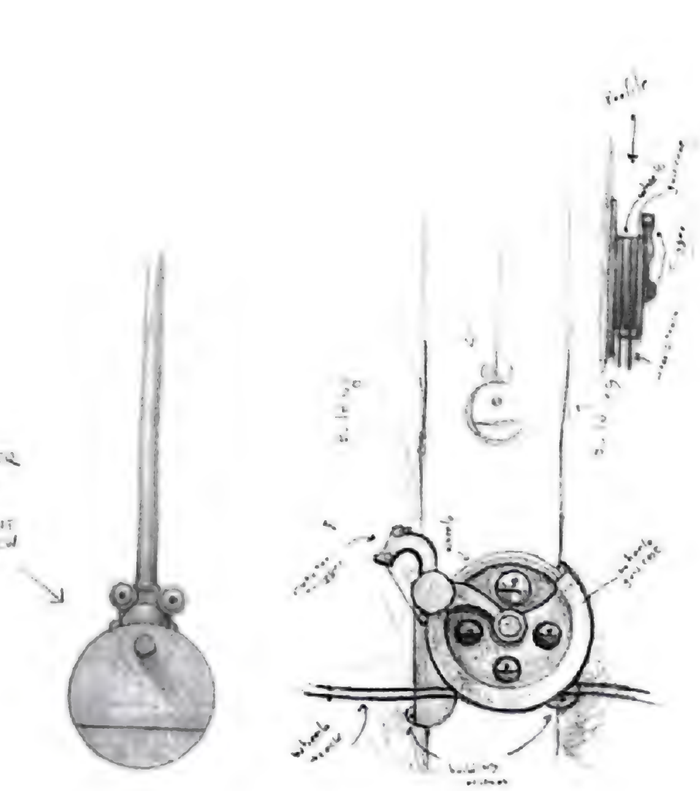
One of the cool things about the Express sequence is that it's a neat bit of foreshadowing. Rodney goes way up high and way down low, and we see every place he's eventually going to end up in the city, from the train station to the Big Weld building to the low-end area—the whole breadth and depth of Robot City.

MIKE DEFEO, MODELING LEAD

If you have a very emotional sequence, you can sell it with storyboards and script reads, but with action it's much more effective to visualize and feel the pacing. That's when the ball falls into my court. I get the action sequences like the Crosstown Express where we have an entire world to explore, and we have brainstorming sessions to determine what we need to create in this environment. This is a very collaborative process involving all the departments. In my head I know what actions I think would be cool. When I pitch that to Bill Joyce or Steve Martino they can actualize what I was thinking. Then I pass on a rough map of the world to the animators. For these type of scenes, we don't do intense storyboarding but rather go straight to the computer. For Crosstown we built a pre-vis version of the city and Lead Animator Galen Chu and I worked closely to find the camera angles and define the action that would sell the intensity and excitement of the sequence early on.

CARLOS SALDANHA, CODIRECTOR

Above left: LANDING "SCOOPER"
Daniel López Muñoz, 2002, Pencil, 16½ x 9½

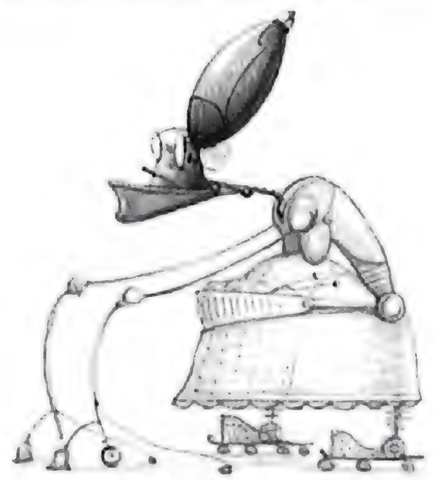


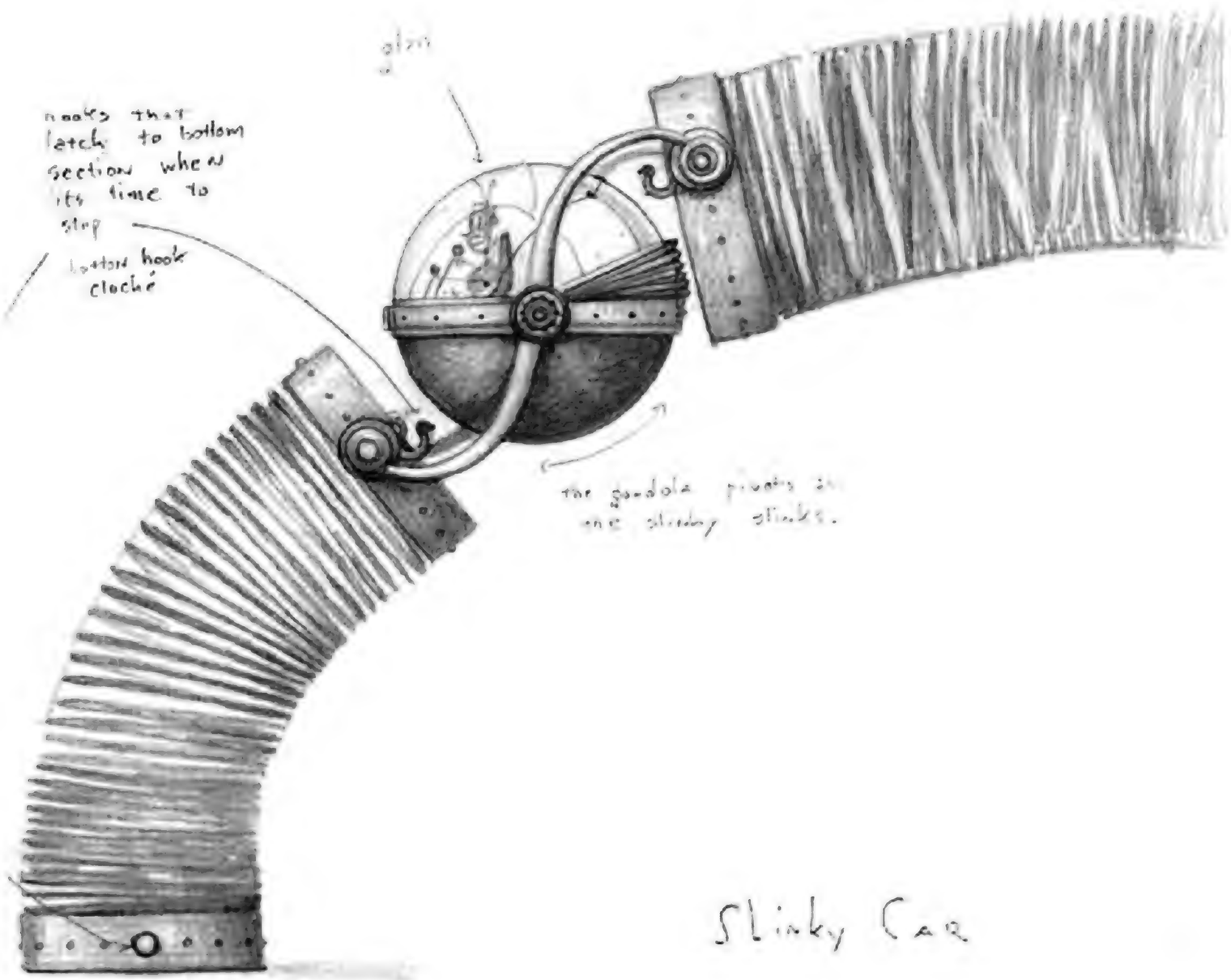
Above: WHEEL-O HAMMER
Bill Joyce, 2002, Pencil, 16½ x 11½

Above: RODNEY'S RIDE THROUGH ROBOT CITY
Production Still, 2004

Above right: KNITTING LADY
Dice Tsutsumi, 2003, Digital

Right: KNITTING LADY
Bill Joyce, 2003, Pencil, 10 x 10



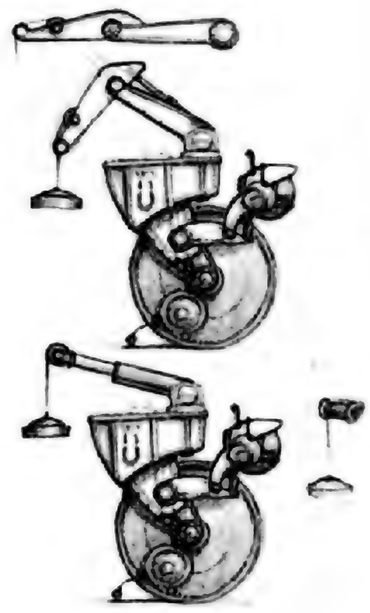


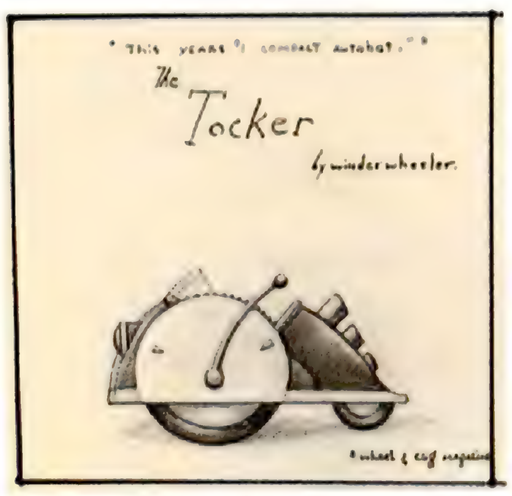
SLINKY CAR
Bill Joyce, 2002, Pencil, 11 x 8 ½

Our films are a collaboration of art, technology, and technique. All of those elements need to be merged together to create something great. There's the art itself, which provides the inspiration, the software and tools that we use, and the application of the technology. When they're all working together, it's extraordinary.

CARL LUDWIG, VP–CHIEF TECHNOLOGY OFFICER

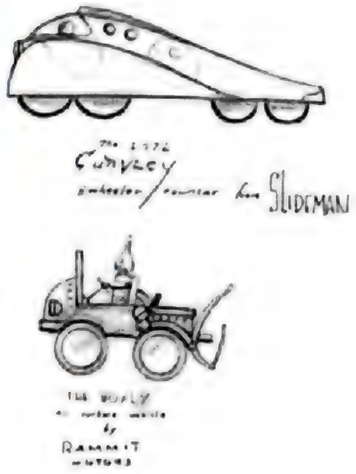
MAGNET TRUCK
Michael Knapp, 2002,
Pencil, 8½ x 11



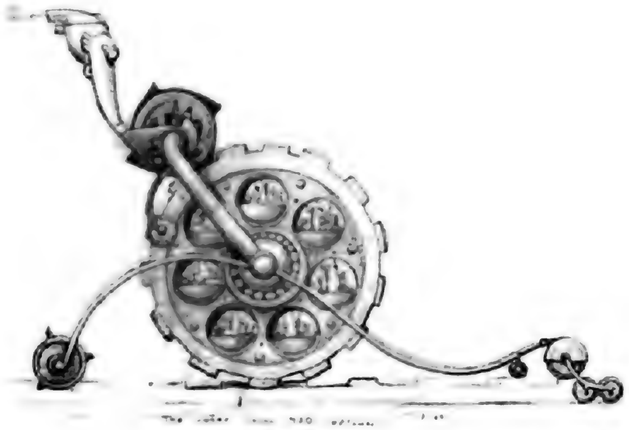


TOCKER CAR POSTER
Bill Joyce, 2000, Pencil, 11 x 11

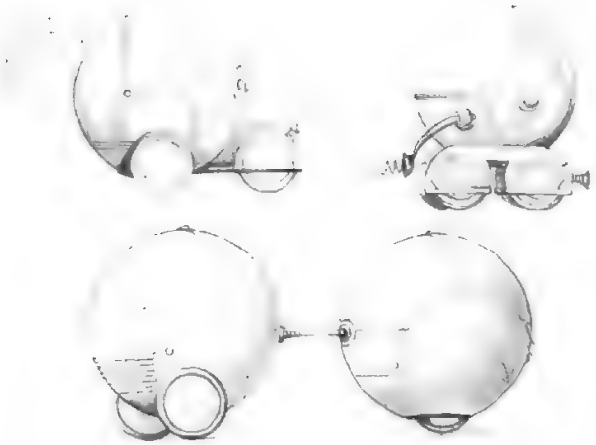
DELIVERY TRUCK
Design by Zeem, CG Model by Salvatore Melluso, 2003, Radiosity Render



VEHICLES
Bill Joyce, 2000, Pencil, 10 x 13



FERRIS WHEEL BUS
Bill Joyce, 2002, Pencil, 17 x 11

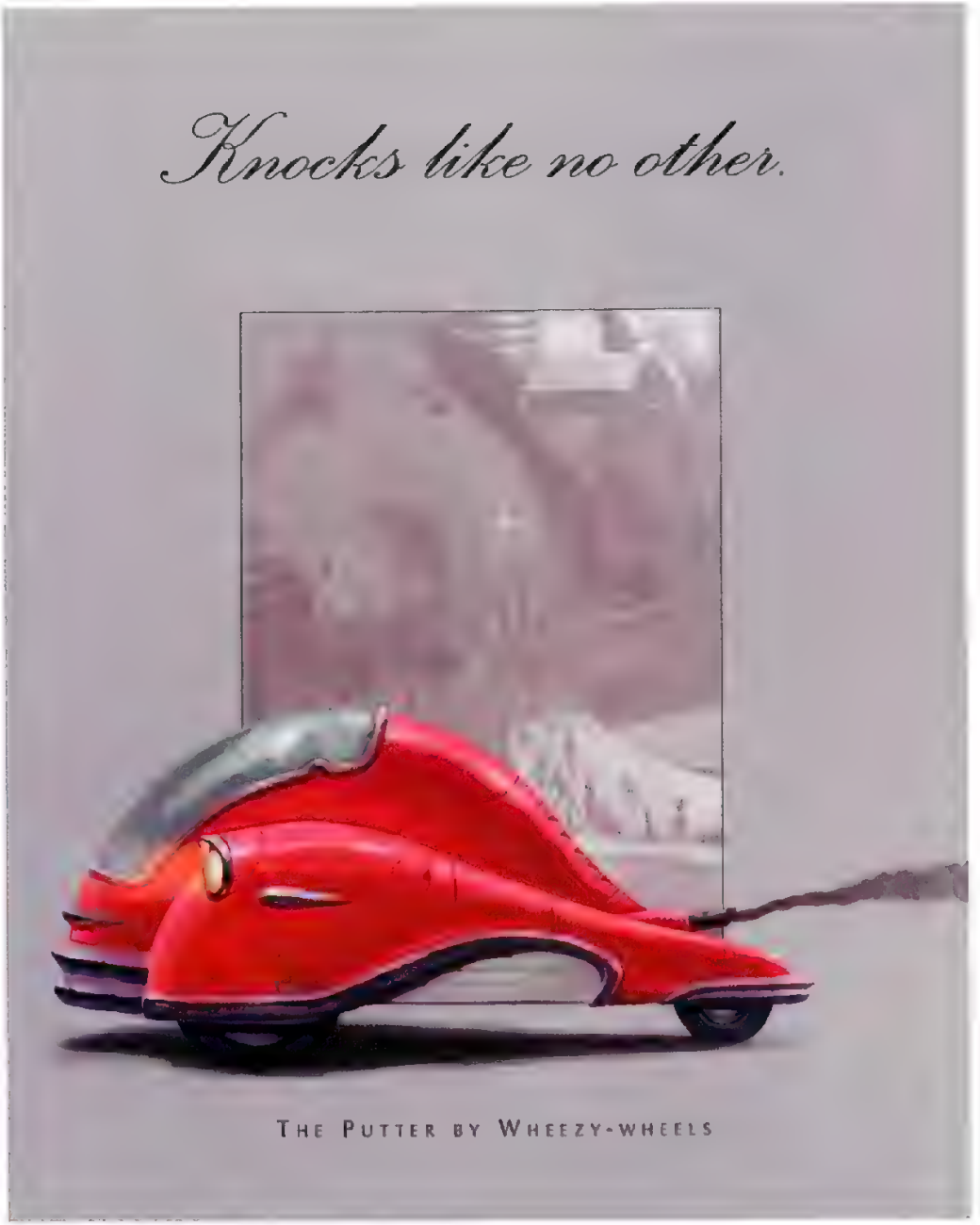


We didn't have the budget to build all the cars we designed, so Mike Knapp came up with a basic round pod that we could tweak a number of different ways. It's pretty ingenious. You can do a whole lot of stuff without having to build a new model—you can make it bigger or smaller, you can put four in a row and make a minibus. It's one structure with multiple configurations, so it looks like we have a lot more different cars than we actually do.

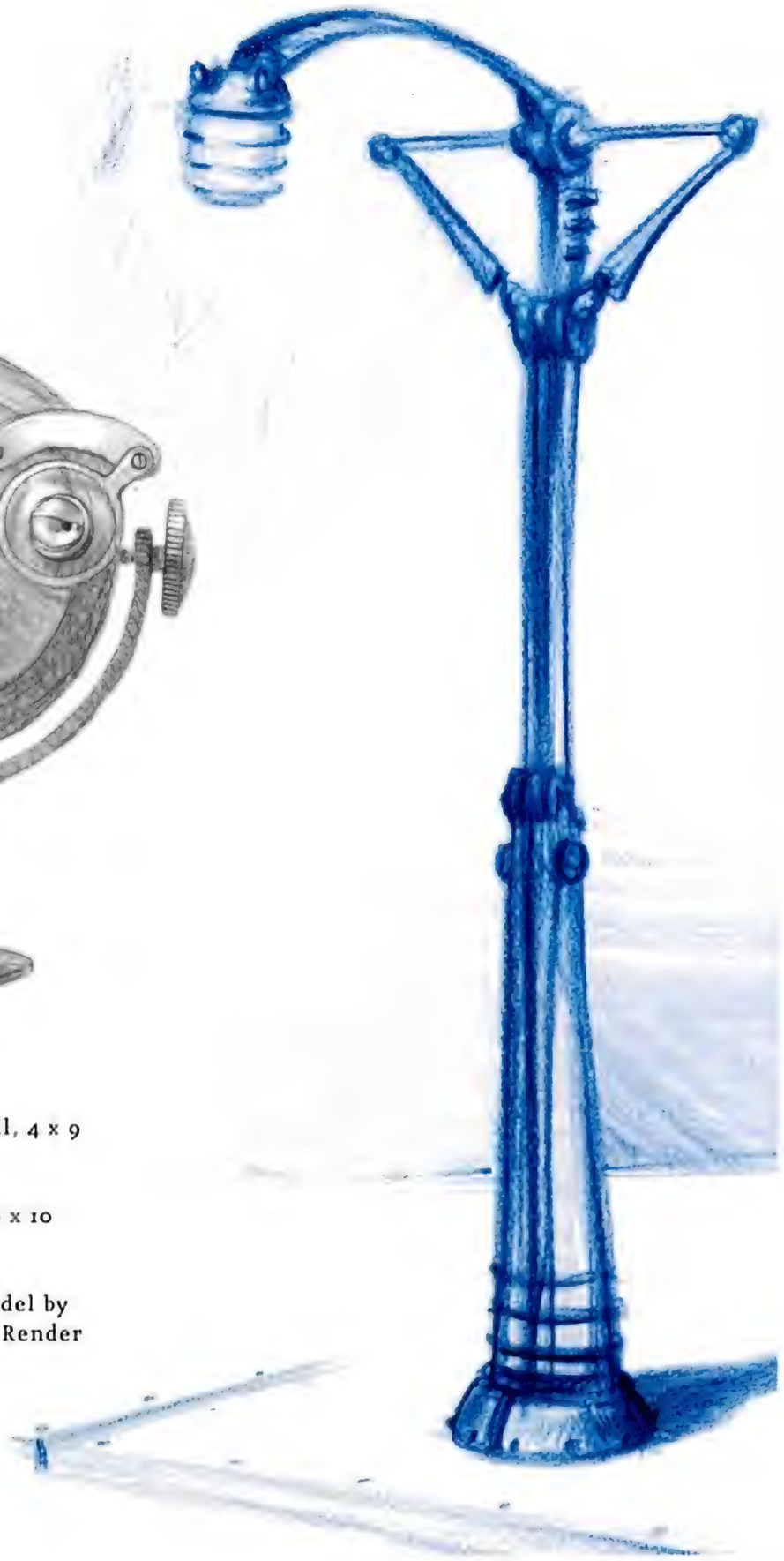
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Top: VEHICLES
Bill Joyce, 2001, Pencil, 15 x 15

Bottom: WIND-UP CARS COLOR CALLOUTS
Vincent Nguyen, 12/2002, Digital



PUTTER CAR POSTER
Michael Knapp, 2002, Digital



Above: TICKET BOOTH BOT
Daniel López Muñoz, 2003, Pencil, 4 x 9

Right: STREET LAMP
Michael Knapp, 7/2002, Pencil, 6 x 10

Far right: STREET LAMP
Design by Michael Knapp, CG Model by Brien Hindman, 2003, Radiosity Render

Where do you draw the line on what's alive and what isn't? We worried a lot about that, and finally we just said—when we need it to talk, it talks. That's pretty much where we left it. And no one questions it. Once a lamppost talks, from then on people are willing to take whatever comes.

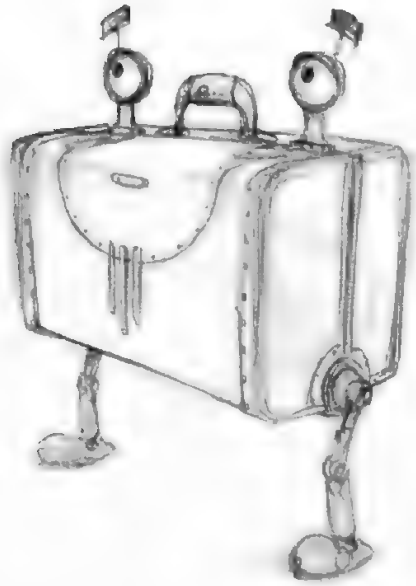
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Bill has a way of placing nuts, bolts, screws, or a seam to give you a face or a little attitude. Sometimes you won't see the face but you'll feel the expression, the way an open mouth can make a character look surprised. It could be a building with windows positioned like eyes and a round doorway, like someone screaming or gasping.

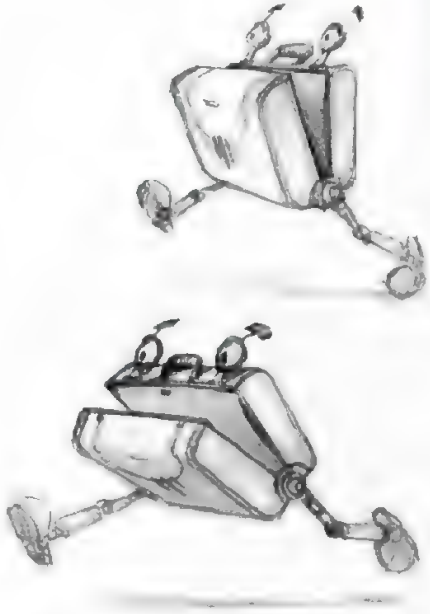
STEVE MARTINO, ART DIRECTOR

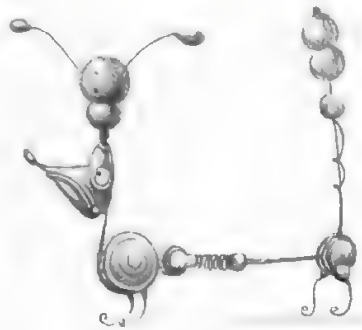
WATERCOOLER BOT
Greg Couch, 2003, Pencil, 11 x 14

VENDING MACHINE BOT
Designed by Michael Knapp, CG Model by Dan Shimmyo, 2003, Radiosity Render



SUITCASE BOT
Michael Knapp, 5/2003, Pencil, 16 x 10





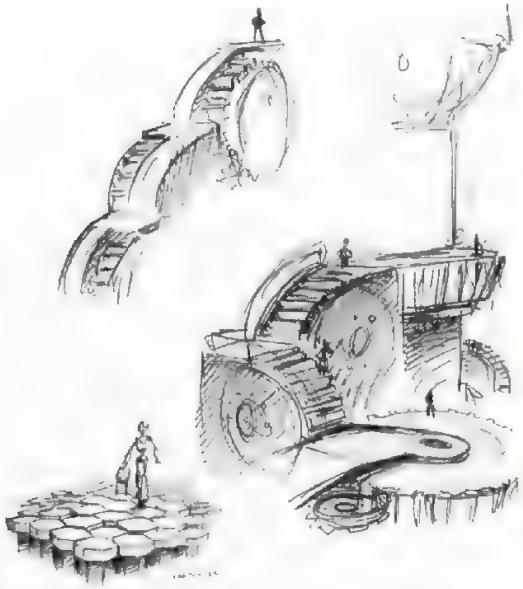
DOGGY CONCEPT
Bill Joyce, Pencil, 2001, 9 x 6

HIGH-END CITY

The action element of the story is really exciting. In a way it's more exciting than *Ice Age*. Nature limits you sometimes, whereas in this movie we had a unique mechanical world. We could have kinetic fun with it—we had more freedom with our chases and action sequences. On the other hand, the art direction in *Ice Age* favored a world where the characters were furry and cuddly, and because this is a metallic world it could feel a little colder. So part of the story challenge was to find the emotional core of this metallic world, and then make the art direction support and enhance it. Finding the heart of a movie is always a challenge.

CARLOS SALDANHA, CODIRECTOR

Opposite: ROBOT CITY SKETCH
Greg Couch, 2002, Pencil, 17 x 11½



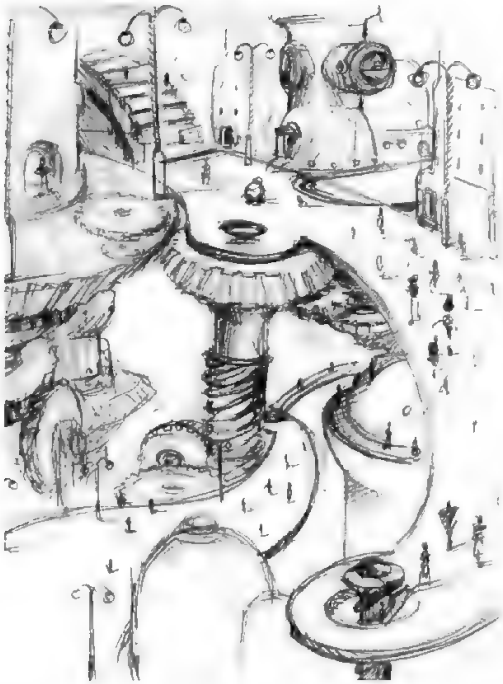
Clockwise from top:

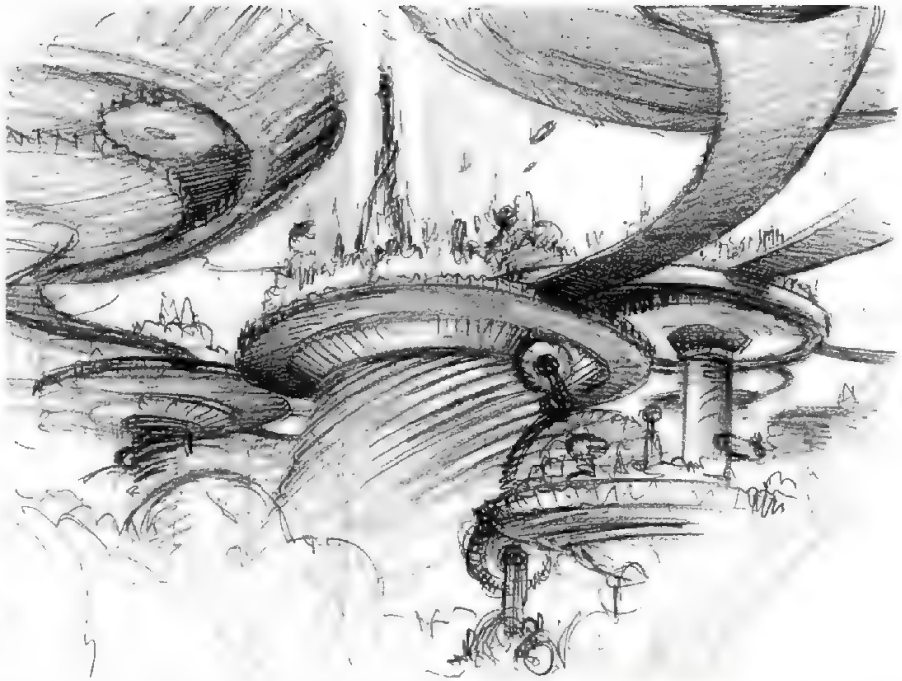
BIG WELD STREETS
Daniel López Muñoz, 2002, Pencil/Digital

POCKET WATCH MECHANICS
Reference for Robot City

LORETTA'S STREET PAINTING
Dice Tsutsumi, 2003, Digital

STEPS AND STAIRS SKETCH
Michael Knapp, 2002, Pencil, 8 x 9



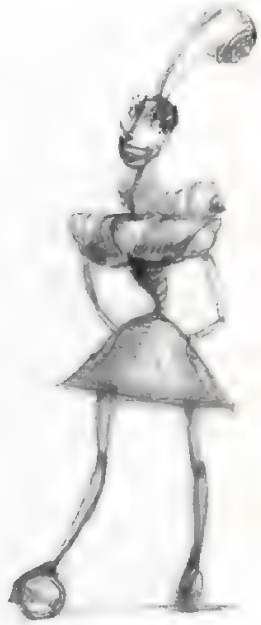


This is High-End land, where the femme fatale Loretta lives, so we lit it rosy and warm. The buildings are beautiful, sleek, feminine shapes that really echo her hairdo more than anything. I looked at a lot of the crazy dress shapes from the early nineties, a lot of fashion stuff like Jean Paul Gauthier and Dior. Also a lot of our shapes came from Elizabethan- or Civil War–era stuff with giant hoop skirts. That was perfect—we'd just do a cone of metal. And there's filigree on them, like old suits of armor with tons of delicate engraving that only the rich could afford. There's some of that in the High-End party fashion.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Above left: CITY STREET SKETCH
Michael Knapp, 6/2002, Pencil, 8 x 11

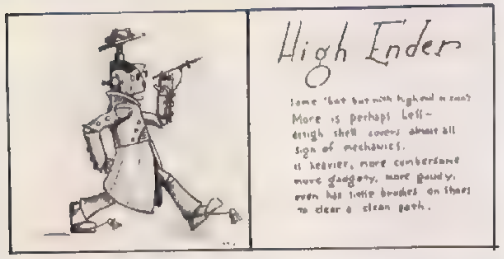
Above: UPSHOT OF HIGH-END CITY AREA
Michael Knapp, 6/2002, Pencil, 8 x 6



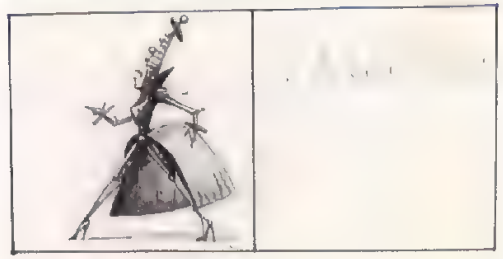
Right: LORETTA
Greg Couch, 2003, Pencil, 9 x 17

Far Right: FASHION BOTS
Design by Greg Couch,
CG Model of Male Fashion Bot by Sheldon Chow,
CG Model of Female Fashion Bot by Jenga Mwendo,
2003, Radiosity Render

RACING TOWARD THE CITY
Thomas Cardone, 2003, Digital



HIGH-ENDER
Bill Joyce, 2000, Pencil, 24 x 17

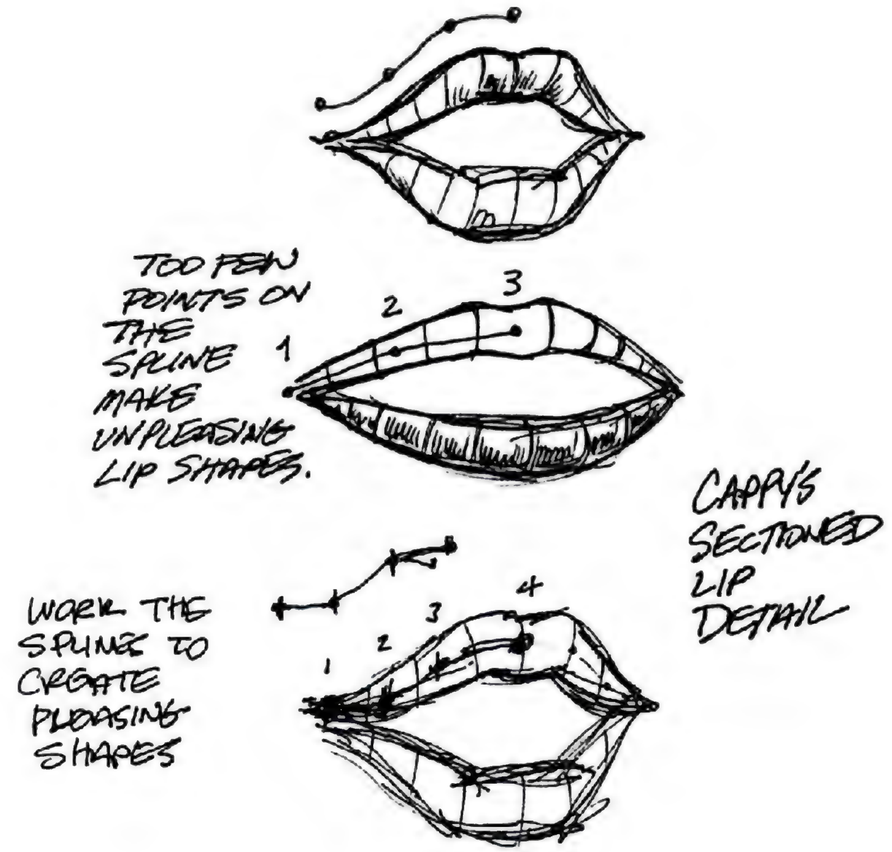


HIGH-END GIRL BOT
Bill Joyce, 2000, Pencil, 24 x 17

BIG WELD
INDUSTRIES
BIG WELD PLAZA COLOR
Thomas Cardone,

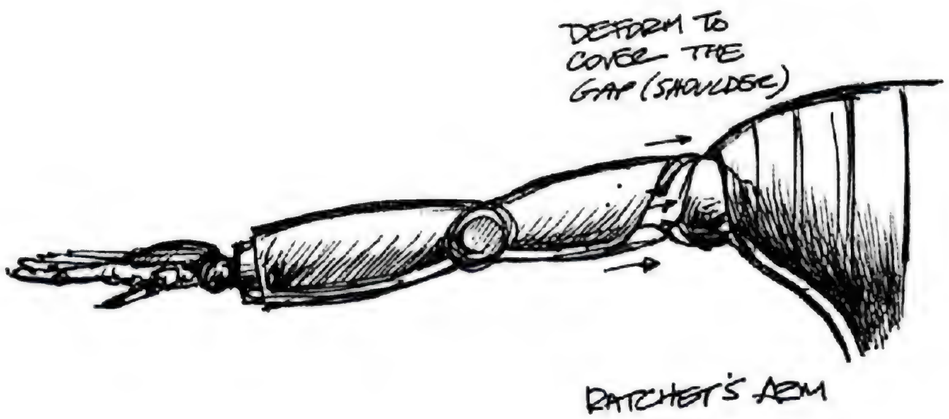
AFTER ANIMATING THE FUR-COVERED FOUR-LEGGED CREATURES of *Ice Age*, animation supervisor Mike Thurmeier figured making the rigid metallic characters of *Robots* move would be relatively painless. The sleek, shiny, robot characters seemed to lend themselves perfectly to CG animation; they have no fabric, flesh, or hair to deal with, and their anatomy is firm and fixed. But as Thurmeier and the rest of the Blue Sky animation crew soon discovered, animating all-metal characters presented its own unique set of challenges. "This is the hardest thing I've ever animated," Thurmeier insists. "You don't get anything for free. The models look great as static images, but there's no flab jiggling around or tails and ears to follow through. You have to work incredibly hard to get a really good expression or mood."

"There's a tension throughout the movie between materials and animation," says director Chris Wedge. That tension arose from the give-and-take within the filmmakers' dual desire to keep the robots' behavior true to the properties of real metal while still creating characters that were articulate, warm, and expressive. In particular, the use of a traditional principle in animation called "squash and stretch"—the distortion of shapes to give a character the illusion of weight and



Above: CAPPY'S LIP DETAIL
Steve Martino, 2003, Ink, 7 x 6

Left: BIG WELD SHOW COLOR KEY
Steve Martino, Thomas Cardone,
2003, Digital



RATCHET'S ARM DETAIL
Steve Martino, 2003, Ink, 6 x 6

volume—became difficult, because everyone knows metal is minimally pliable, and it was important to the filmmakers that the audience feel the creatures populating this story were, while lifelike, truly metallic.

It became clear early on that striking this balance between physics and psyche for the robots was crucial. Early animation tests showed that the robots were in fact just too "mechanical." Co-director Carlos Saldanha remembers that the crew had to go back and find ways of making the characters more organic and fluid within their metallic structures. "At one point, we looked at a sequence and said, 'Oh—Rodney's so *stiff*!'" Saldanha says. "That was a breakthrough. We knew we had to find a way to break the rules without breaking the character, and that's when we discovered we could deform his face more."

This new strategy for deformation—the CG animators' term for squash-and-stretch—spurred great progress in bringing the characters to life. Mike Thurmeier recalls similar efforts to make Big Weld's expressions more malleable: "We started Big Weld one way and realized we weren't getting the expression in the face, so we went back and had a lot of discussion about the eyebrows and mouth and other things that we could [manipulate] to make him more appealing." The modelers, who create the virtual 3-D models used by the animators, found ways of breaking up faces into overlapping zones, for example the pair of discs around Cappy's lips that obscure the deforming behaviors of her metal mouth. For their part, the animators experimented with all sorts of techniques to make metal seem to slide, in order to create expressions in characters without distorting their geometry.

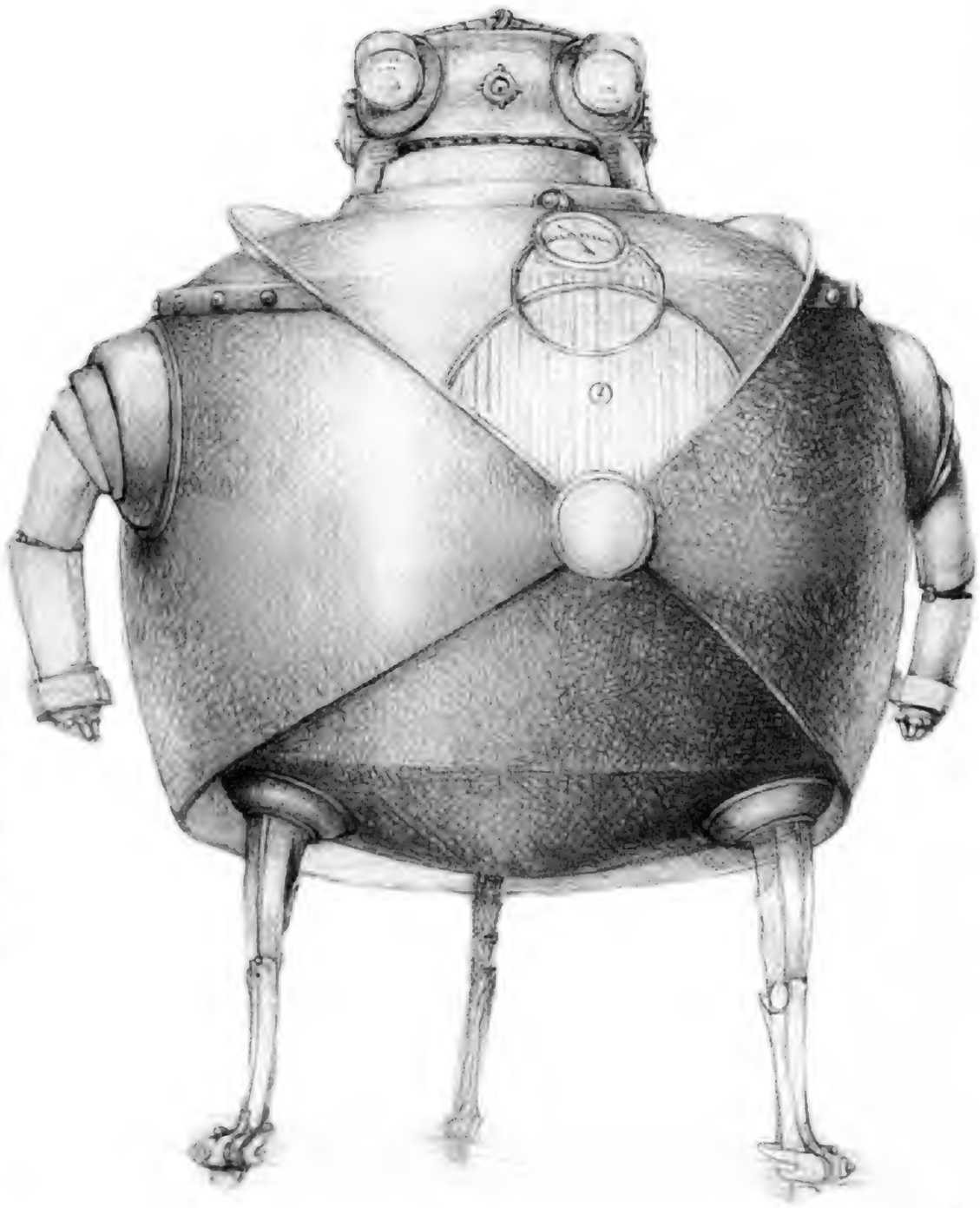
The entire crew worked with the animators to find additional creative solutions for increasing characters' mobility. The modelers came up with tricks designed to increase flexibility, like the use of nested metal cups for characters' necks and spines to allow a wider range of motion without "bending" the metal. The riggers, whose task is to define the full range of a character's movement for the animators, built hidden extension rods into the characters' arms, legs, and spine, allowing characters to gesture for extreme poses, again without creating the impression of stretching metals.

Curiously, in the case of the villains, the immobility of the metal actually proved to be helpful in establishing their personalities. "Ratchet's mother, Gasket, is the one main character with no deforming geometry on her face, and it definitely feels creepy," says Rigging Lead Mark Piretti. "Ratchet feels creepy too, because he deforms mostly just along the slats on his face."

Ultimately, though, creating a convincing performance was paramount, even if physical laws had to be cheated a bit. Chris Wedge says, "Surprisingly, as we've gone through this, we've discovered you can do just about anything in the service of a character's expression, because the audience is looking for performance. I think in the end people won't notice the deforming metal on our robots' faces."

BIG WELD

BIG WELD
Bill Joyce, 2000, Pencil, 8½ x 11



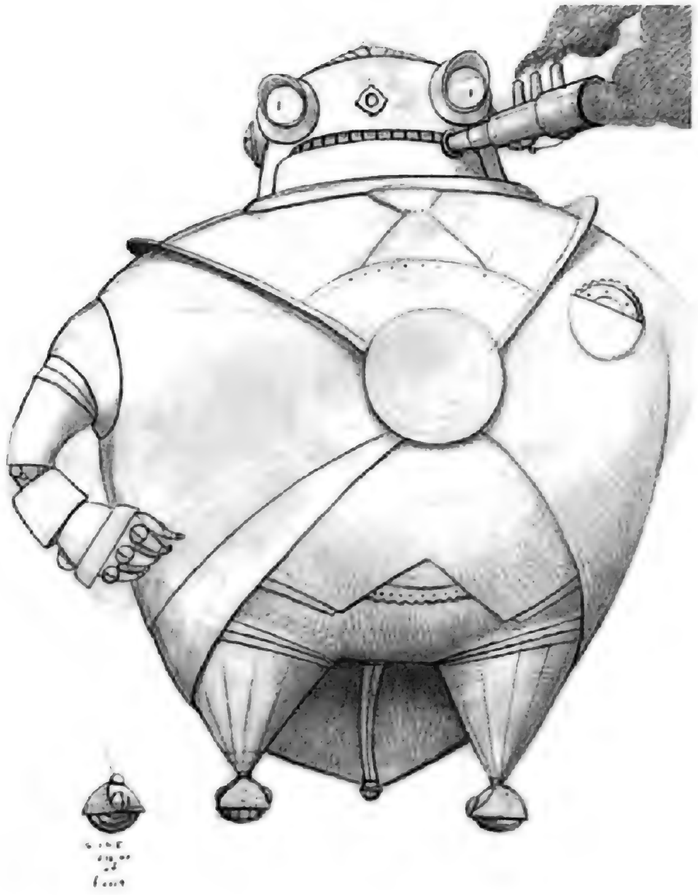
BIG WELD
Greg Couch, 2000, Pencil, 14 x 17

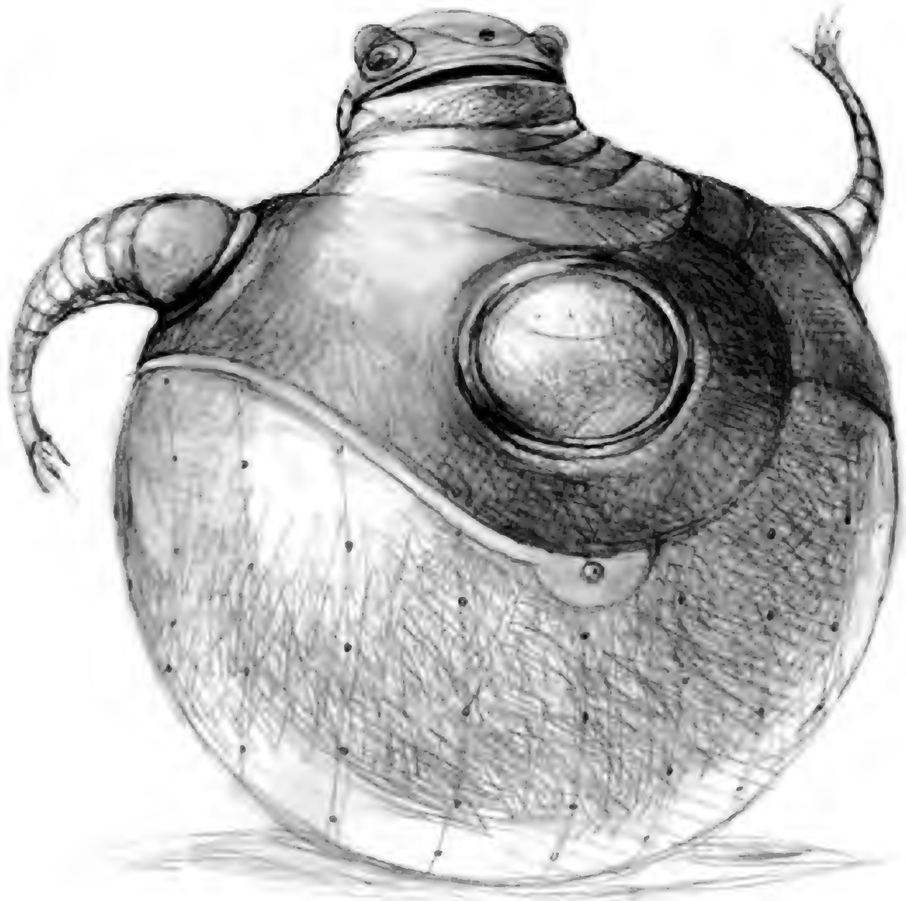
Mr. Big Weld is supposed to be Santa Claus, Falstaff, and Walt Disney all rolled into one. He's a jovial, bigger-than-life guy. We kept thinking of the character actor Eugene Pallette, who played Friar Tuck in *Robin Hood*. In the earlier version Big Weld was kind of an asshole, but then he started softening up.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

LOW-END BIG WELD
Design by Greg Couch, CG Model by Shaun Cusick, 2003, Radiosity Render

LOW-END BIG WELD COLOR CALLOUTS
Vincent Nguyen, 8/2002, Digital





Right: BIG WELD
Bill Joyce, 2000, Pencil, 14 x 17

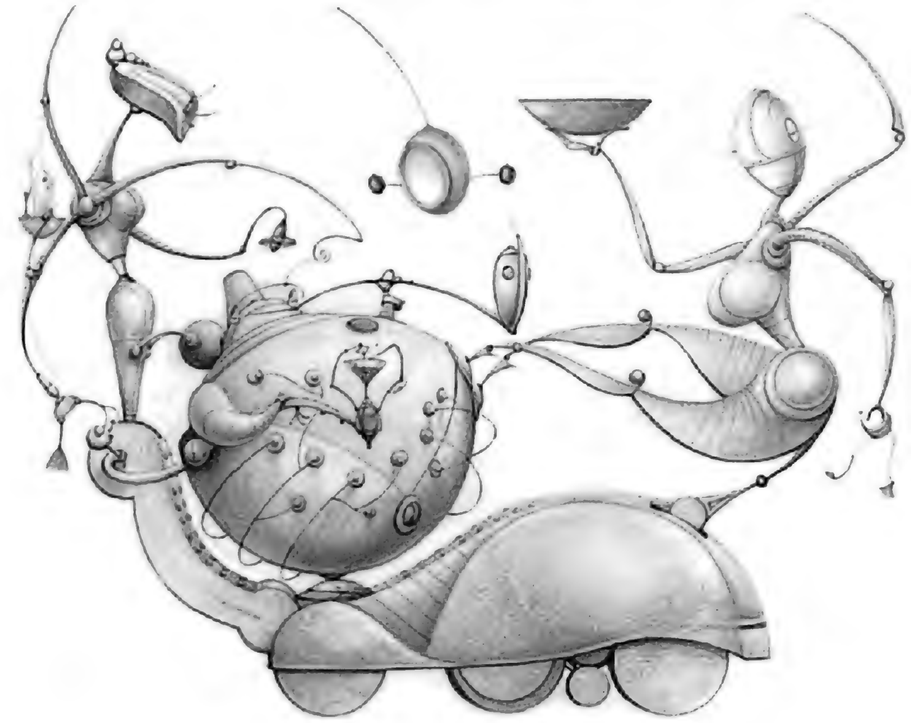
Far right: BIG WELD
Greg Couch, 2002 , Pencil, 11 x 14

He started out with legs, and then he was going to have been so fat and lazy he no longer needed legs. He'd just be ferried around. Then I did a drawing of all the pleasure-bots massaging him. That was the first time he didn't have legs at all, and it just felt right for his character. I don't think anybody drew him with legs again.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

They didn't want him to seem like a 1930s industrialist with a waistcoat and tails. In the final design, we evoke a jacket and a sense of clothing without making it feel like a waistcoat. We make it fit the High-End contemporary visual language we'd come up with.

GREG COUCH, DESIGNER



TICKLE BOTS
Bill Joyce, 2002, Pencil, 17 x 11

Big Weld is more than just a character in the movie. He is who Rodney is searching for and is symbolic of Rodney's dream. He represents the value of imagination and creativity. He is a force that we introduce through Rodney's eyes in the beginning of the film, and Chris [Wedge] always felt that when we finally meet him and see him through our own eyes, he needs to fulfill our expectations and be very large and commanding.

CHRIS MELEDANDRI,
PRESIDENT OF FOX FEATURE ANIMATION

Above, from top: BIG WELD COLOR CALLOUTS
Vincent Nguyen, 2003, Digital

BIG WELD'S LIMO
Michael Knapp, 12/2002, Pencil/Digital, 14 x 7

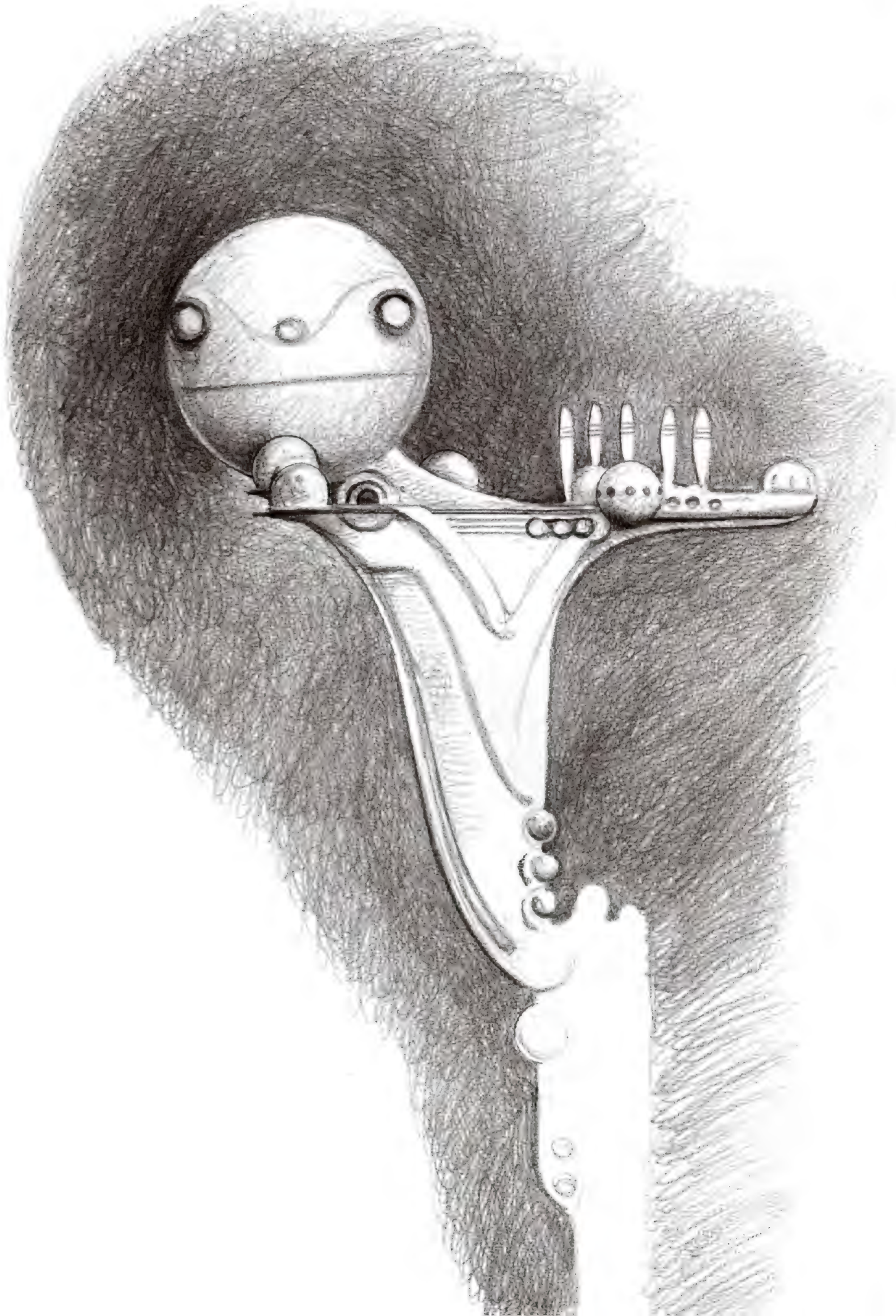
BIG WELD'S LIMO
Bill Joyce, 2002, Pencil, 14 x 11

Right: BIG WELD
2003, Final Render

BIG WELD MANSION

Once we figured out the characters, we decided the places they lived reflected what they looked like. I won't say it made it easy, but it cut down the options. I did Big Weld Mansion in twenty minutes. We'd been sitting around talking about it, and Chris Wedge said "It's off by itself, way up on high," and I said, "Yeah, like the house at the end of *North by Northwest*." That's all it needed. Mike Knapp designed the mansion's gates and I think they're gorgeous, just exquisite.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



Right: BIG WELD MANSION
Bill Joyce, 2002, Pencil, 9½ x 13

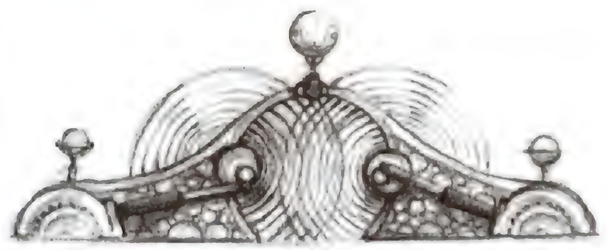
Opposite page, clockwise from top:
MANSION COLOR
Dice Tsutsumi, 2003, Digital

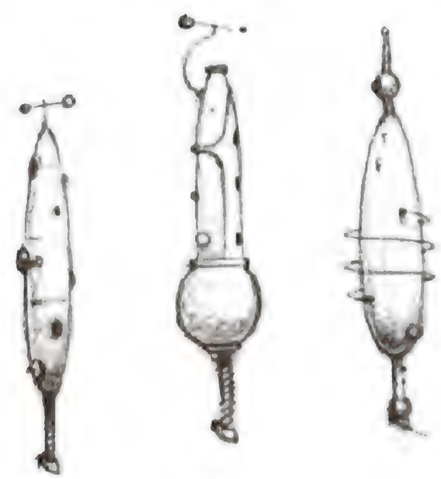
MANSION GATES & TREES
Michael Knapp, 12/2002, Pencil, 11 x 14

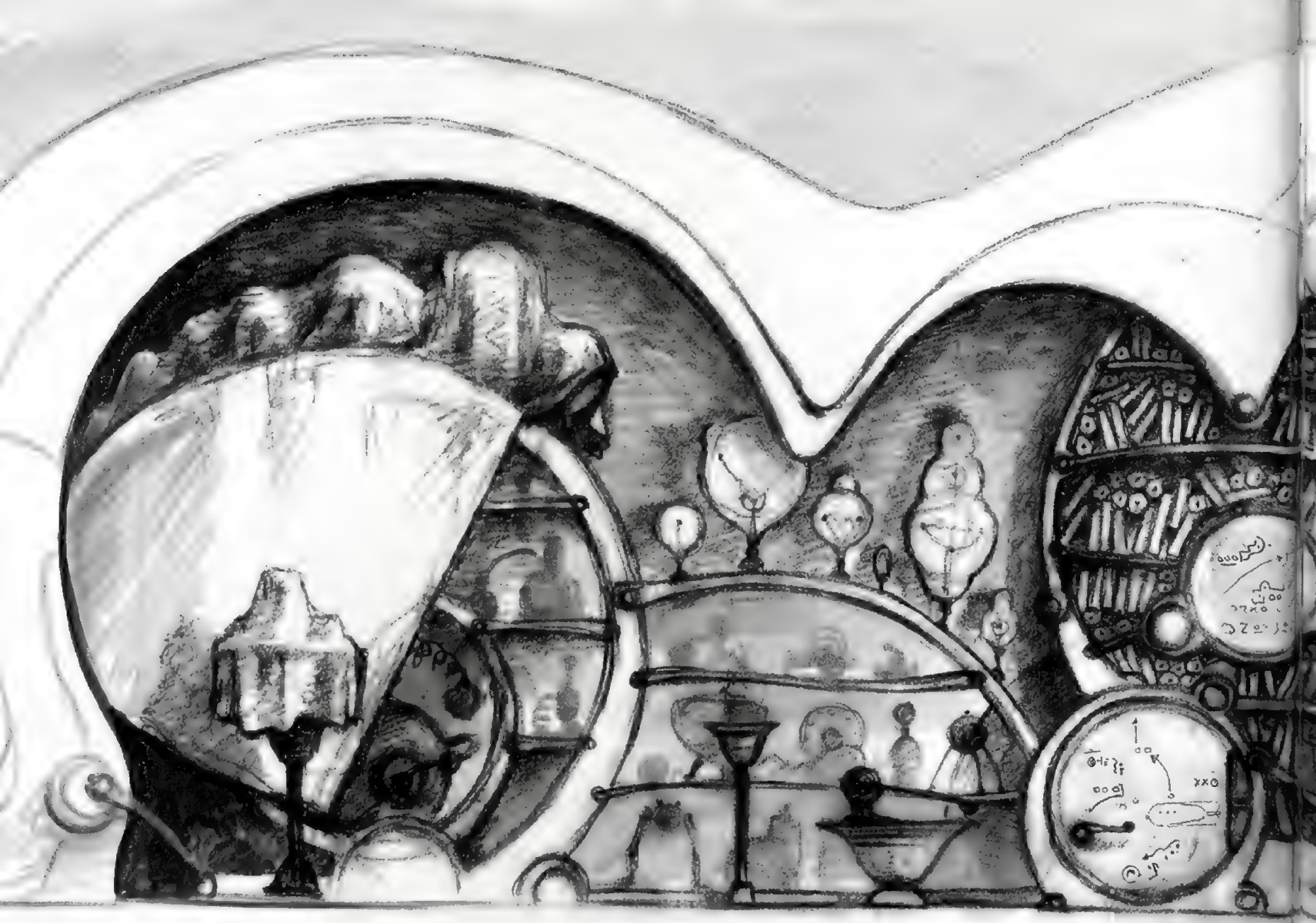
MANSION GATE DETAIL DRAWING
David Gordon, 4/2003, Digital

LIGHTS

SLOT FOR WINDING ARM
GATE IS ACTUALLY A BIG SPRING...
THAT'S WOUND UP BY THIS DEVICE.







BIG WELD WORKSHOP
Michael Knapp/Bill Joyce, 1/2003, Pencil, 17 x 6

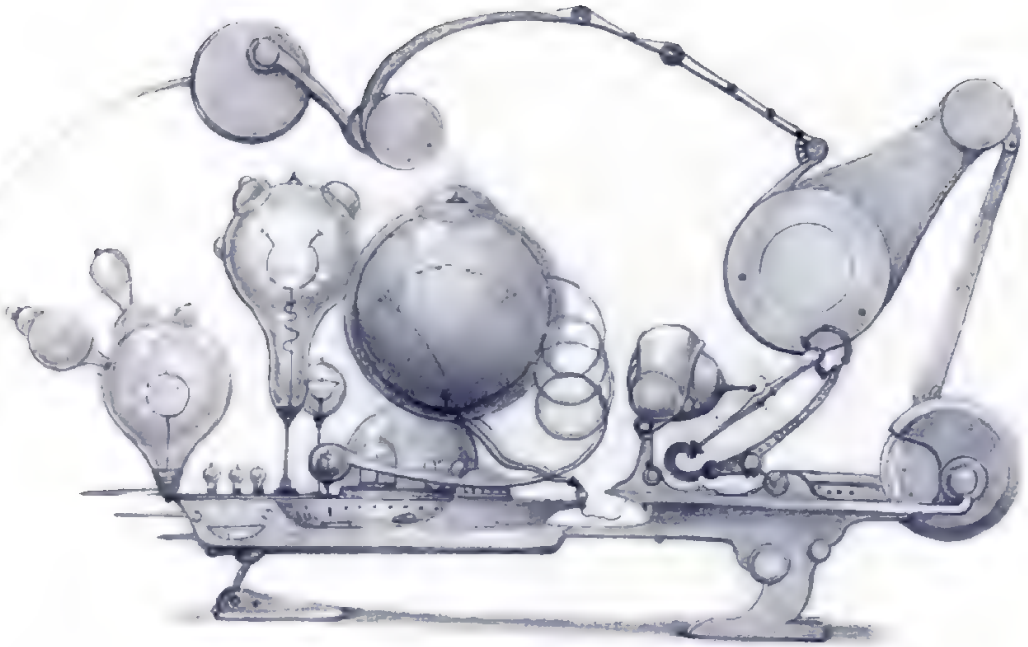
We wanted it to feel like you were inside this guy's brain. I started looking for globes and mad lab equipment. There's this cool David Selznick movie from the thirties called *Just Imagine*—it's set in the future and it's got the best crazy laboratory stuff I've seen. And back in the Victorian days they had these cool armillary globes, with the planets twisting around on little brass rings. There's a great lab in the remake of *The Time Machine*—that helped, especially when Dice started working out the colors. And then I went to the eye doctor, and they brought out the ophthalmic eye tester with all the little lenses. That was the inspiration for the interconnecting blackboards that Big Weld would write his theories on.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Opposite: BIG WELD WORKSHOP
Bill Joyce, 2003, Pencil, 16 x 11

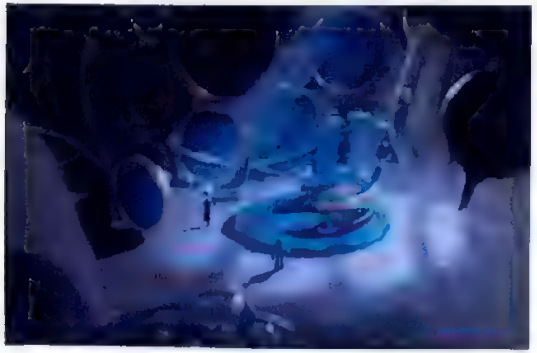
Top: BIG WELD WORKSHOP COLOR
Dice Tsutsumi, 2003, Digital

Bottom: BIG WELD WORKSHOP COLOR
Dice Tsutsumi, 2003, Digital



Chris has the best visual taste of anybody I've ever worked with. That's why we disagreed maybe three times, and over minor things like the size of a head or how a foot bends. He just has good taste. I don't know how to elaborate it better and it almost sounds trite, but when you get right down to it, he has very good taste.

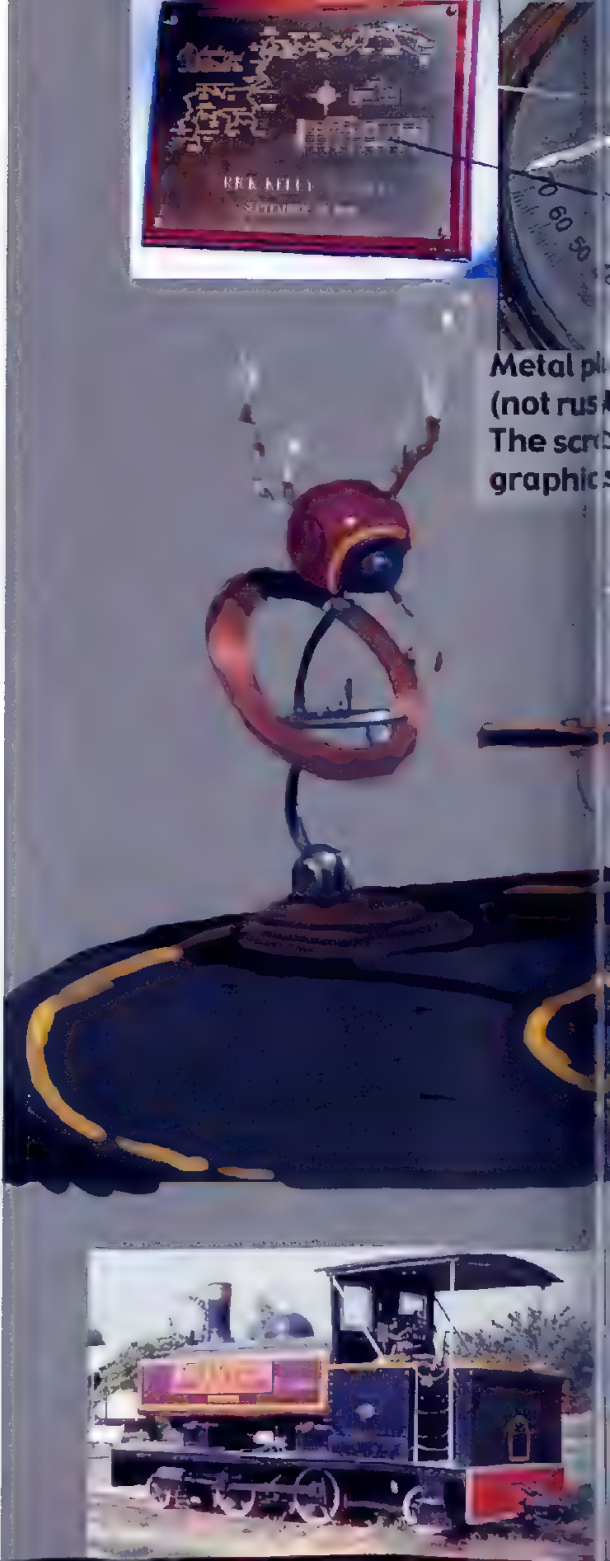
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



Above: BIG WELD WORKSHOP DESK
Bill Joyce, 2003, Pencil, 11 x 17

Left: BIG WELD WORKSHOP COLOR KEY
Dice Tsutsumi, 2003, Digital

Right: BIG WELD WORKSHOP COLOR CALLOUTS
Dice Tsutsumi, 2003, Digital

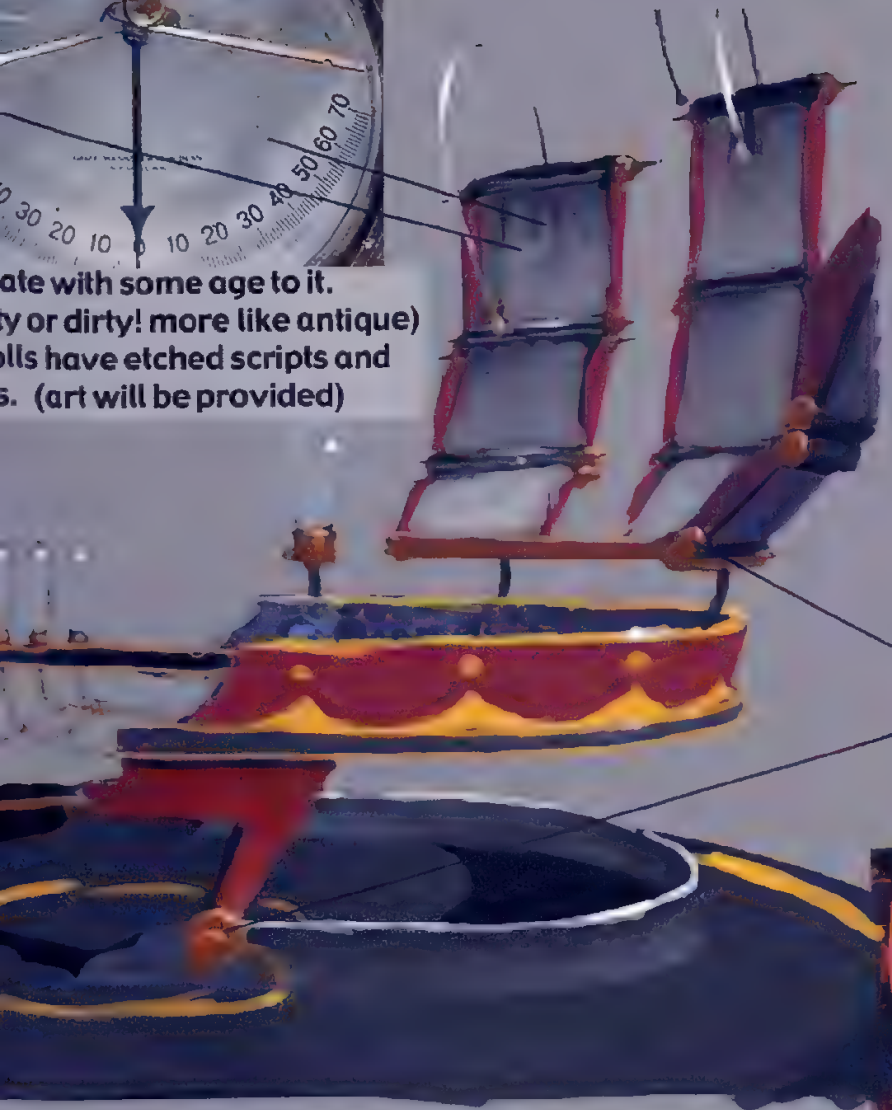


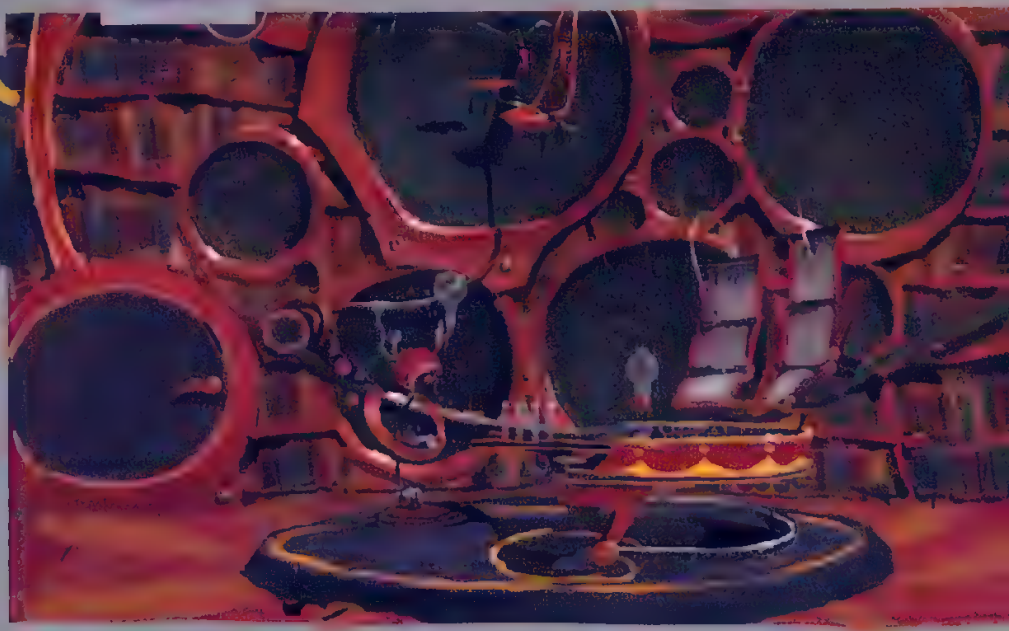
ate with some age to it.
y or dirty! more like antique)
lls have etched scripts and
s. (art will be provided)

Buttons and dials should be simple!
*Black painted dials
*Push-buttons have 4 colors.
*Chrome trims with occasional brass rim

*Silver Plate (just like the scroll)
*Painted red-grey on the outside
*Painted Yellow on the rims
*Grey table top like the bottom piece

All the brass should be antique!!!
Just like the Brass bottom of this bulb!





BIG WELD INDUSTRIES

BIG WELD INDUSTRIES
Todd Winter, 6/2002, Charcoal, 17 x 11

TEAPOT
Reference for Big Weld Industries

I've worked by myself most of my professional life, and it's a bit lonely. What I love about animation and this project in particular is finding a group of people willing to adapt to my style. But along the way we ended up forging a third style—there's their style, and my style, and this third thing we came up with that reflects a bit of everybody. Basically, we're all bumping into things and trying to create magic out of thin air.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

I was definitely looking at the irregular paneling on Frank Gehry's Guggenheim Museum in Bilbao. That was very influential. Frank Gehry's metal is organic, and that's something we wanted to incorporate into our film.

DICE TSUTSUMI, COLOR STYLIST

BIG WELD INDUSTRIES
Todd Winter, 6/2002, Digital

BIG WELD LOGO
Steve Martino, 2002, Digital

BIG WELD BUILDING STYLE GUIDE
Dice Tsutsumi, 2/2003, Digital

Left: BIG WELD GATES
Bill Joyce, Pencil, 2002, 13 x 9

Below: BIG WELD GATES
Steve Martino, 2002, Pencil, 8 x 10

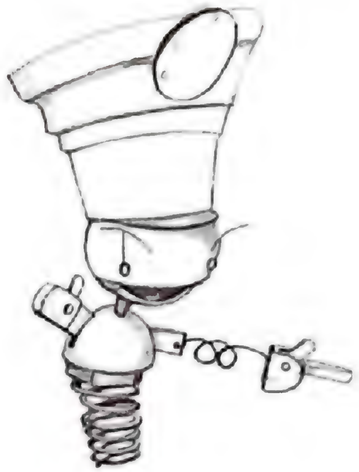
Below from left:
GATE GUARD TIM
Bill Joyce, 10/2002, Pencil, 6 x 8

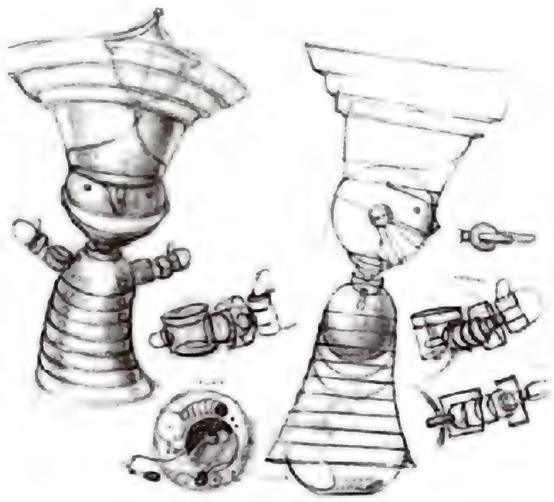
GATE GUARD TIM
Bill Joyce, 10/2002, Pencil, 6½ x 8½

GATE GUARD TIM BREAKOUTS
Greg Couch, 2002, Pencil, 11 x 14

Tim the doorman is entirely a Chris Wedge invention. He said, "What if it's just this cruel, awful little jackass puppet?" Everybody liked that idea. In designing him, I kept thinking of Kukla, Fran, and Ollie, that sense of cruddiness.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER





Above: BIG WELD GATES
2004, Production Still

Left: GATE GUARD TIM
Dice Tsutsumi, 1/2003, Digital

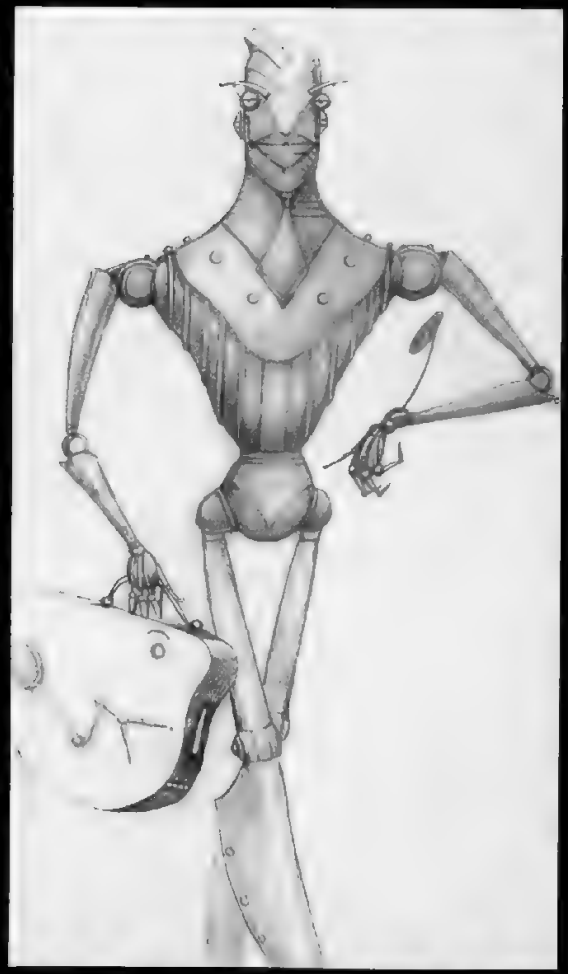
Page 92: BIG WELD BOARDROOM – DAY
Michael Knapp, 7/2002, Digital

Page 93: BIG WELD BOARDROOM – NIGHT
Michael Knapp, 7/2002, Digital

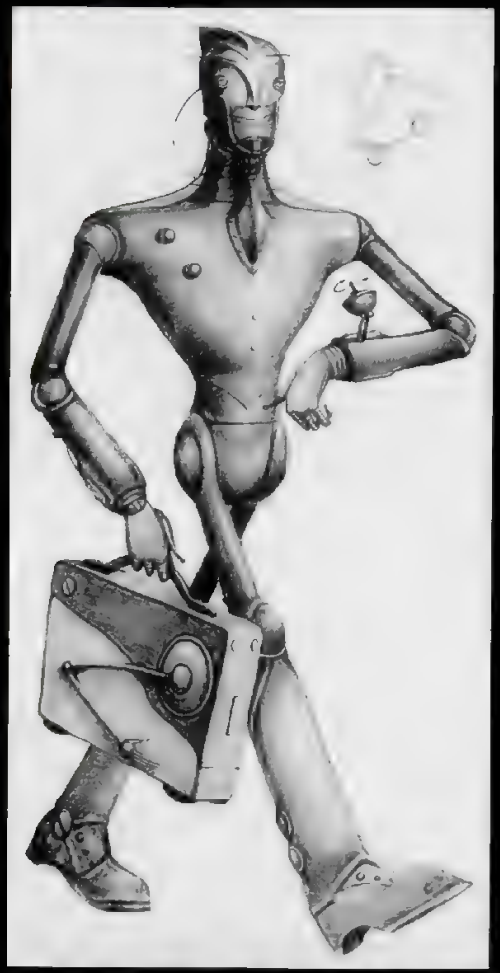
At first we got carried away with the scale of the Big Weld Industries building. It was four miles around and six miles high—it was a mile and a half from the gate to the front door, and the lobby was two miles wide. The first time we put robots around it they were molecules. We thought, "We're probably going to lose our characters in this."

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

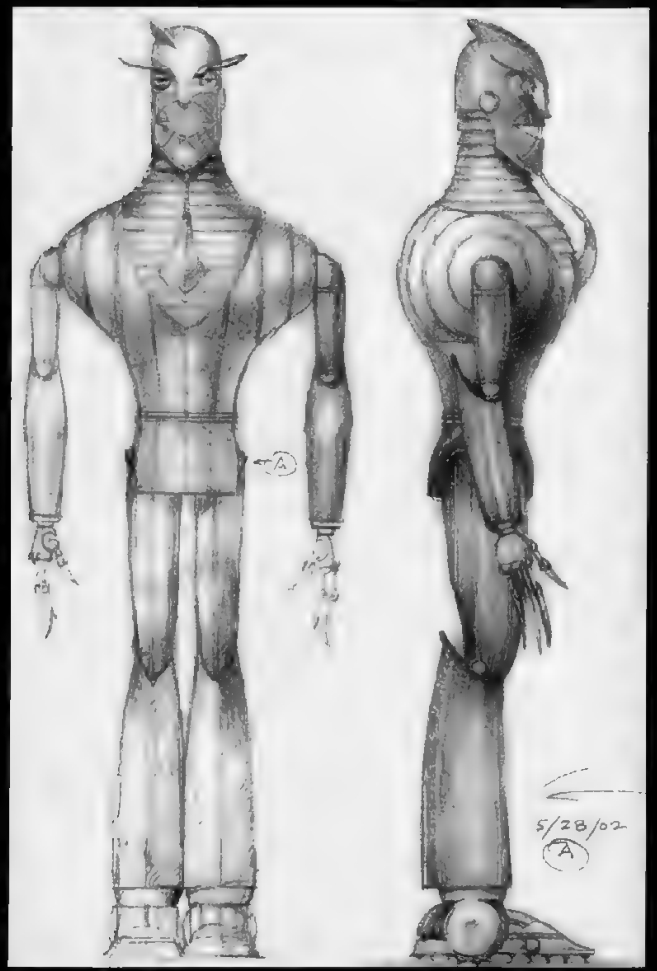
RATCHET



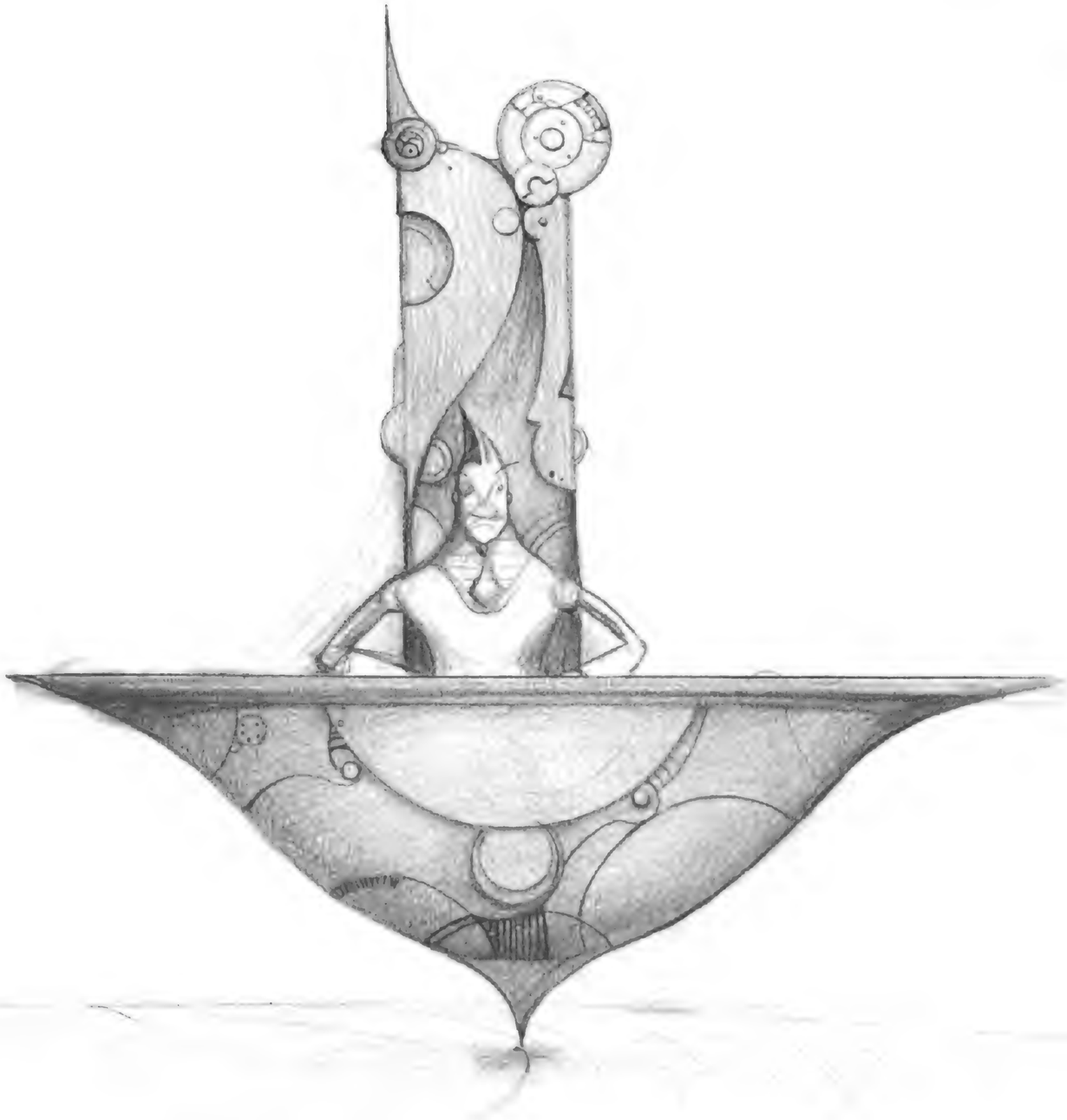
RATCHET
Bill Joyce, Pencil, 2001, 9 x 16



RATCHET
Bill Joyce, Pencil, 2002, 10 x 16



RATCHET
Greg Couch, 5/2002, Pencil, 11 x 17



Ratchet's an evil, young, aggressive, Wall Street, heartless, ruthless, well-tailored New York guy. Our good guys are round—our bad guys are pointy. Ratchet's chin is like a razor blade.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Bill did this drawing of Ratchet sitting at his desk, and the way he used these tracery lines moving around the surface of the desk, I saw that as the Rosetta stone for how you could use the same forms to make buildings. There are circles within circles, and he'd also work some straight lines into these sinuous curves he's got going.

GREG COUCH, DESIGNER

Above: RATCHET'S DESK
Bill Joyce, 2001, Pencil, 11 x 13½

Left: RATCHET
2003, Final Render

CAPPY

Cappy was even harder than Rodney. At first she was Big Weld's daughter, a snobby spoiled brat, and then we made her a smart, sleek career girl. It was all about finding that subtle appeal, and a lot of it came from the Shimano rod-and-reel set. So basically Cappy's the most gorgeous piece of fishing equipment you ever saw.

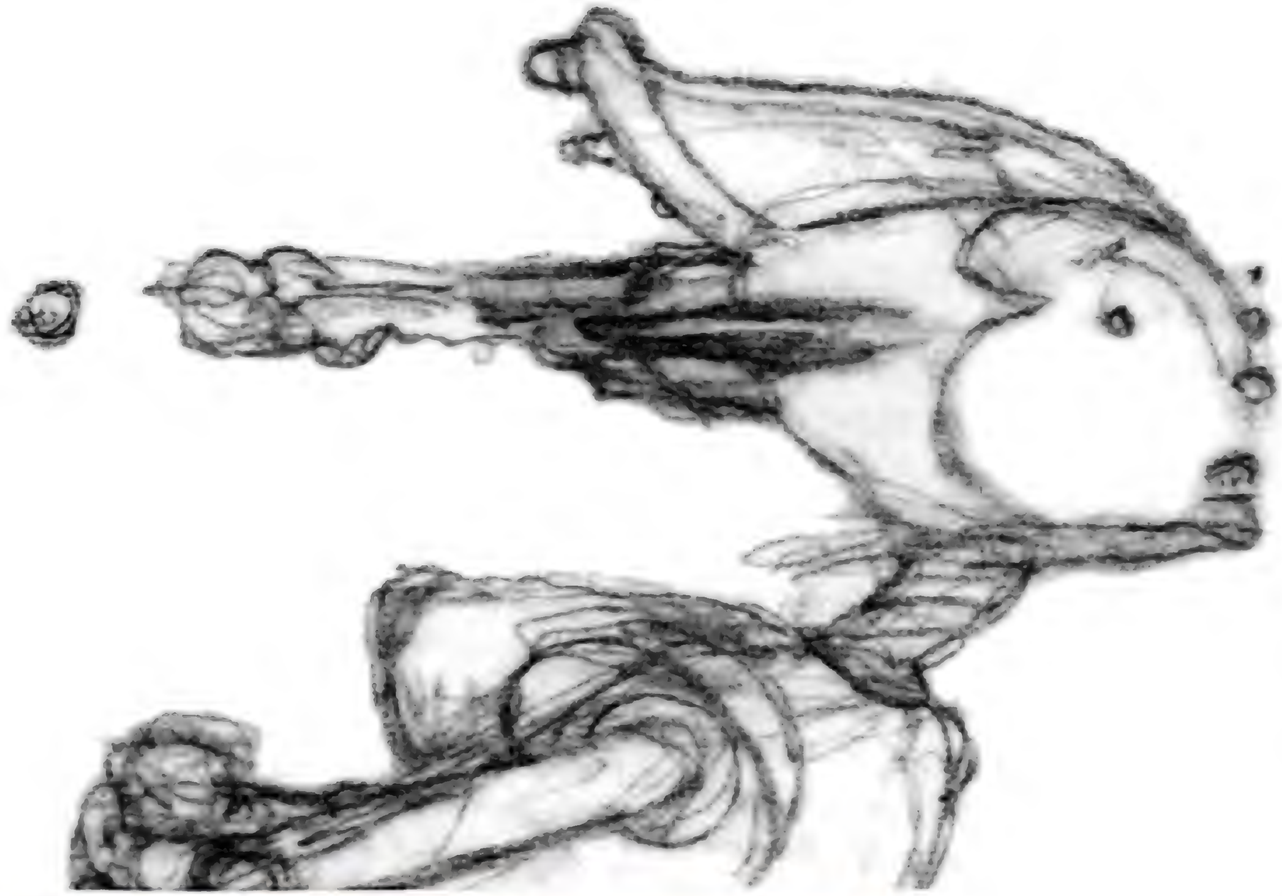
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

While she was closer to a human than other characters in the film, we didn't want to make her a human character. So it was a question of how to give her an appealing shape that still felt mechanical.

CARLOS SALDANHA, CODIRECTOR

She's a High-Ender, so we did a very fine segmentation of her lips to increase their definition, and gave her thin little discs under her cheekbones that could slide and reveal her smile. It gave us more flexibility with her mouth articulation so the animators could really get a performance out of her.

STEVE MARTINO, ART DIRECTOR



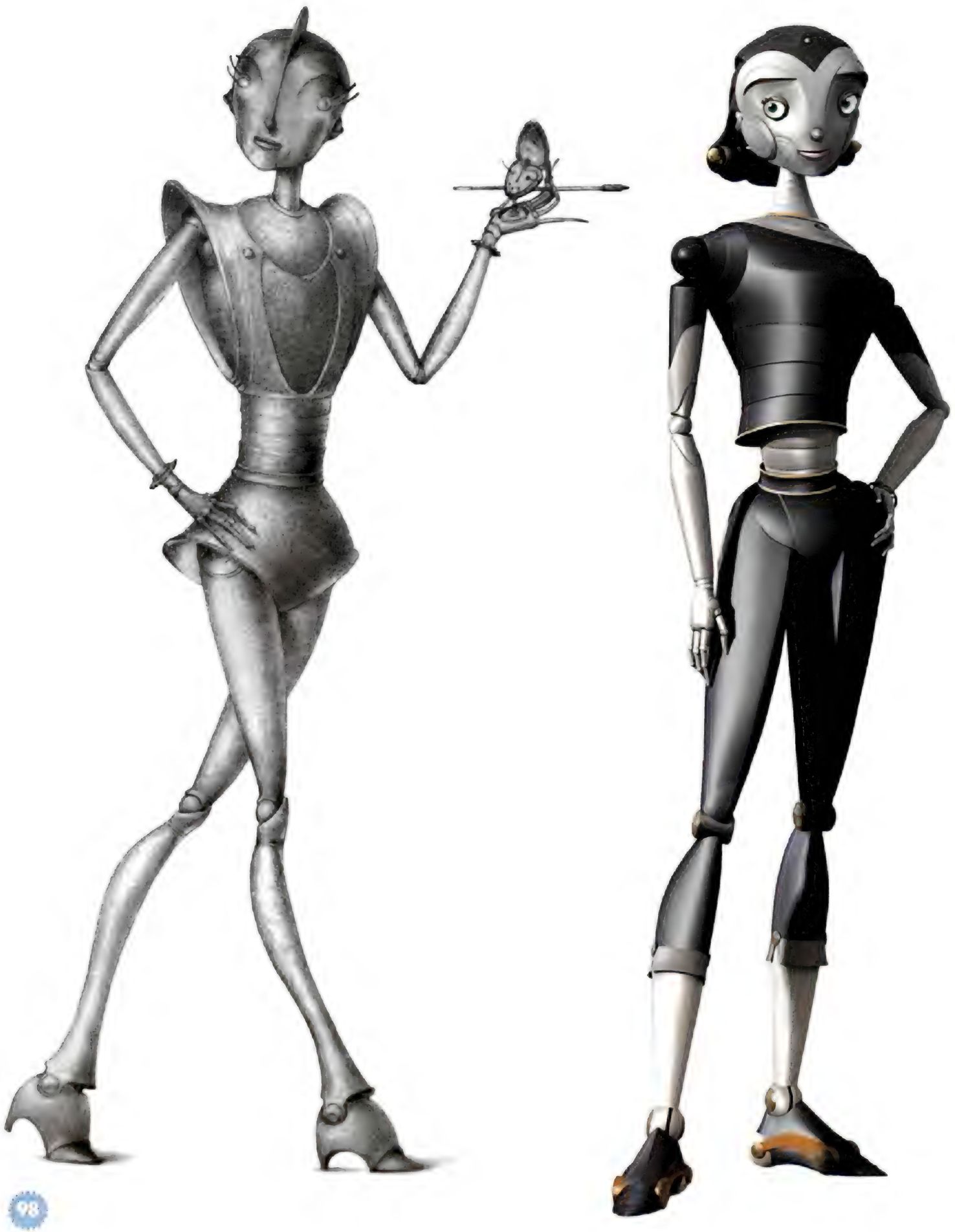
Above: CAPPY
Greg Couch, 2002, Pencil, 10 x 14

CAPPY COLOR CALLOUT
Dice Tsutsumi, 10/2002, Digital

CAPPY'S HAIR
Designed by Greg Couch,
CG Model by Jenga Mwendo,
2003, Radiosity Render

Far left: CAPPY CONCEPT
Bill Joyce, 2000, Pencil, 11 x 17

Left: CAPPY FORMAL
Greg Couch, 2003, Pencil/Digital, 8½ x 16



Cappy's the hardest to animate. She doesn't have that many controllers, but it's all about appeal, on the subtlest level—the tilt of a head, the hint of a smile, the speed of a blink. We had to spend a lot of time getting the right facial pose and making sure the animation was nuanced. Otherwise her face would look dead and android-like.

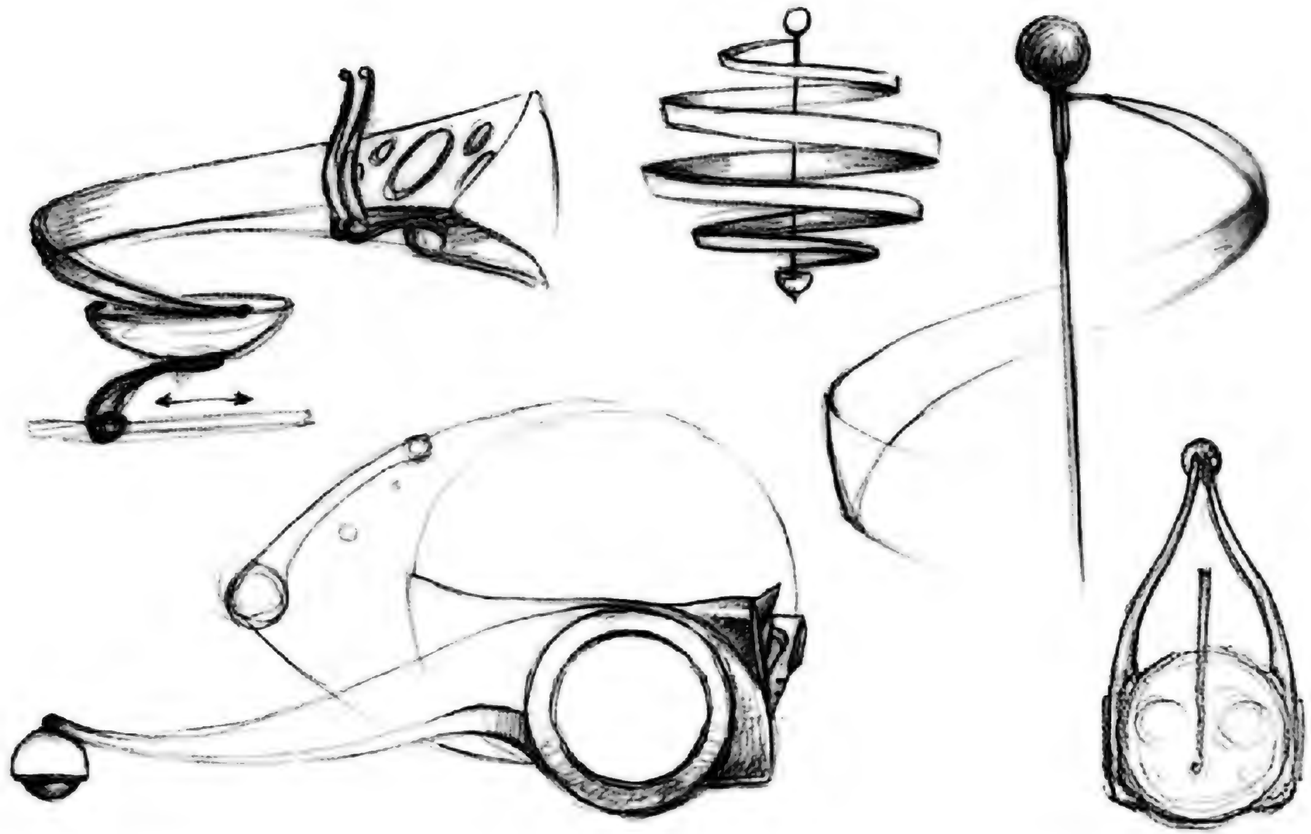
MIKE THURMEIER, ANIMATION LEAD

Almost everything in the movie is reflective to some degree. With Cappy and the other High-End characters, we're giving them diffuse reflections, like the frosted surface of the Shimano fishing reels, so when she stands in a blue room, she's reflecting a soft blue haze on her face.

MIKE ERINGIS, MATERIALS LEAD

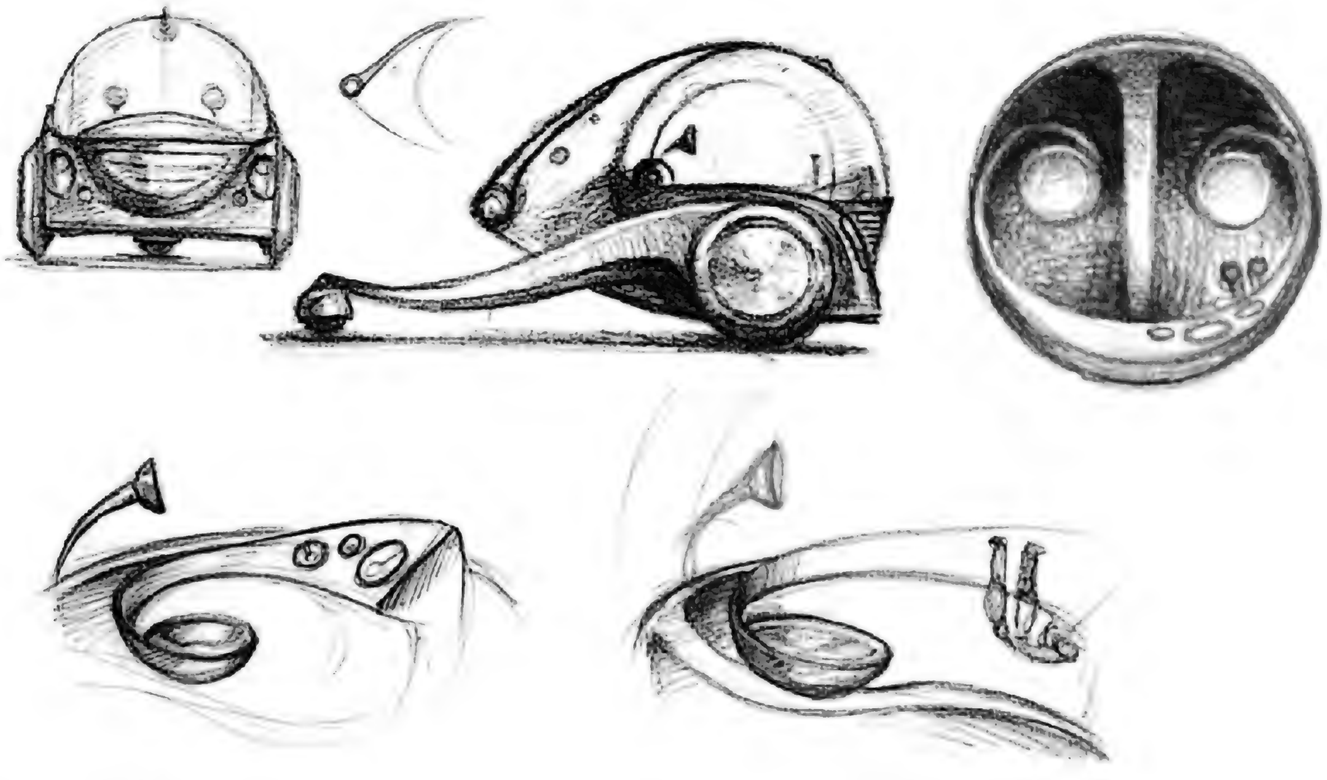
Far left: CAPPY
Bill Joyce, 2000, Pencil, 11 x 17

Left: CAPPY
2003, Final Render



Cappy's car reflects herself—no-nonsense, sleek, feminine. Mike Knapp came up with this flying attachment that was one of my favorite things that got cut from the film. He was looking at Leonardo da Vinci's drawings, and Leonardo had an early helicopter parachute device that would drop and spin.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



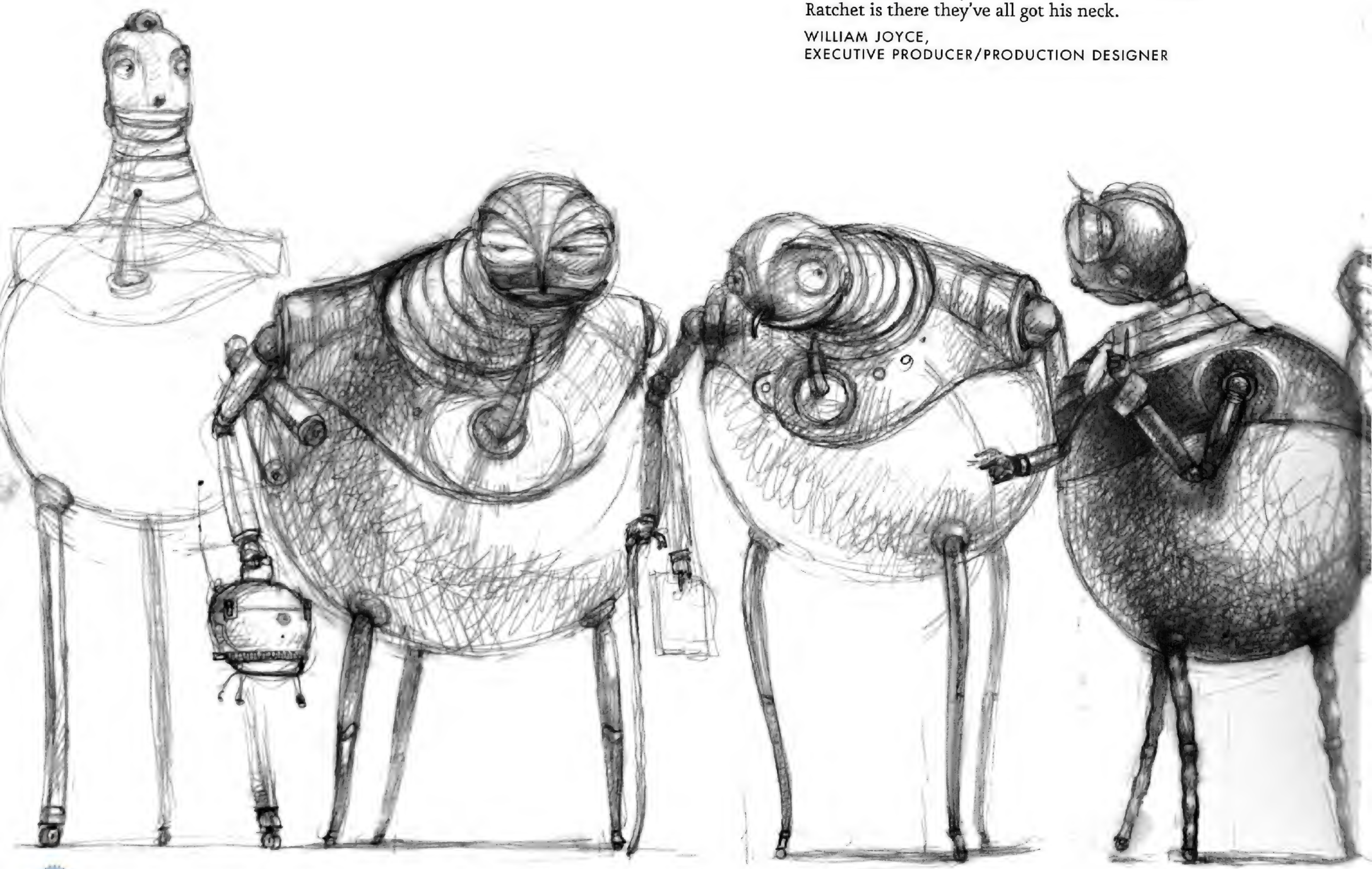
Top: CAPPY'S CAR
Michael Knapp, 2/2003, Pencil, 16 x 10

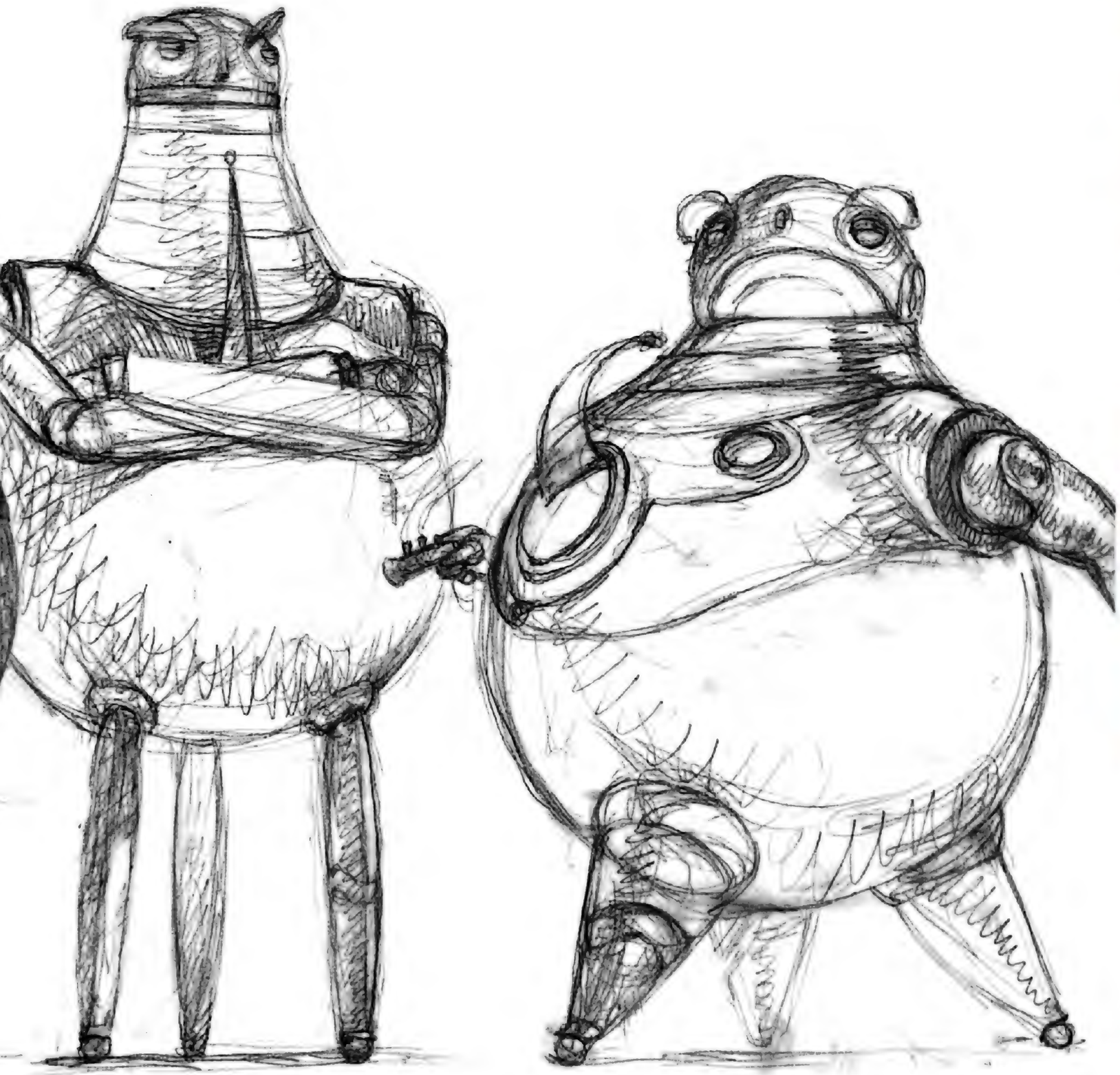
Bottom: CAPPY'S CAR
Michael Knapp, 2/2003, Pencil, 16 x 10

CAPPY'S CAR COLOR CALLOUT
Vincent Nguyen, 2003, Digital

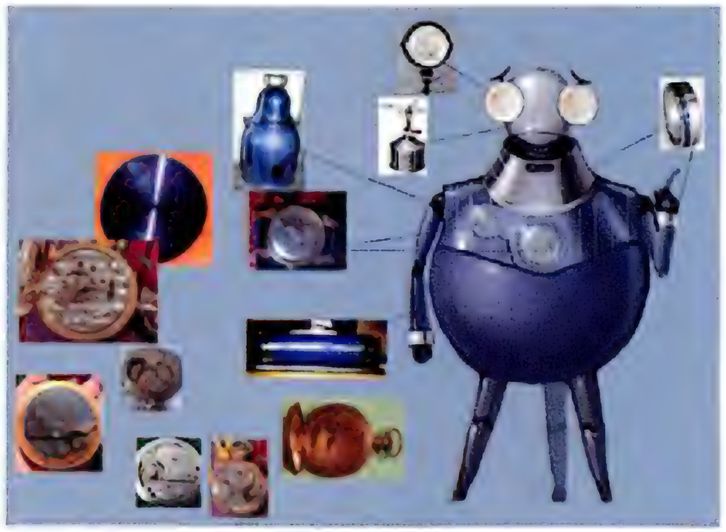
The businessmen at Big Weld Industries are adaptable in that brown-nose corporate way of "Whoever's in charge, that's who we're going to be like." When Big Weld was there, they were all round, and now that Ratchet is there they've all got his neck.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER





FORGE COLOR CALLOUTS
Vincent Nguyen, 1/2003, Digital



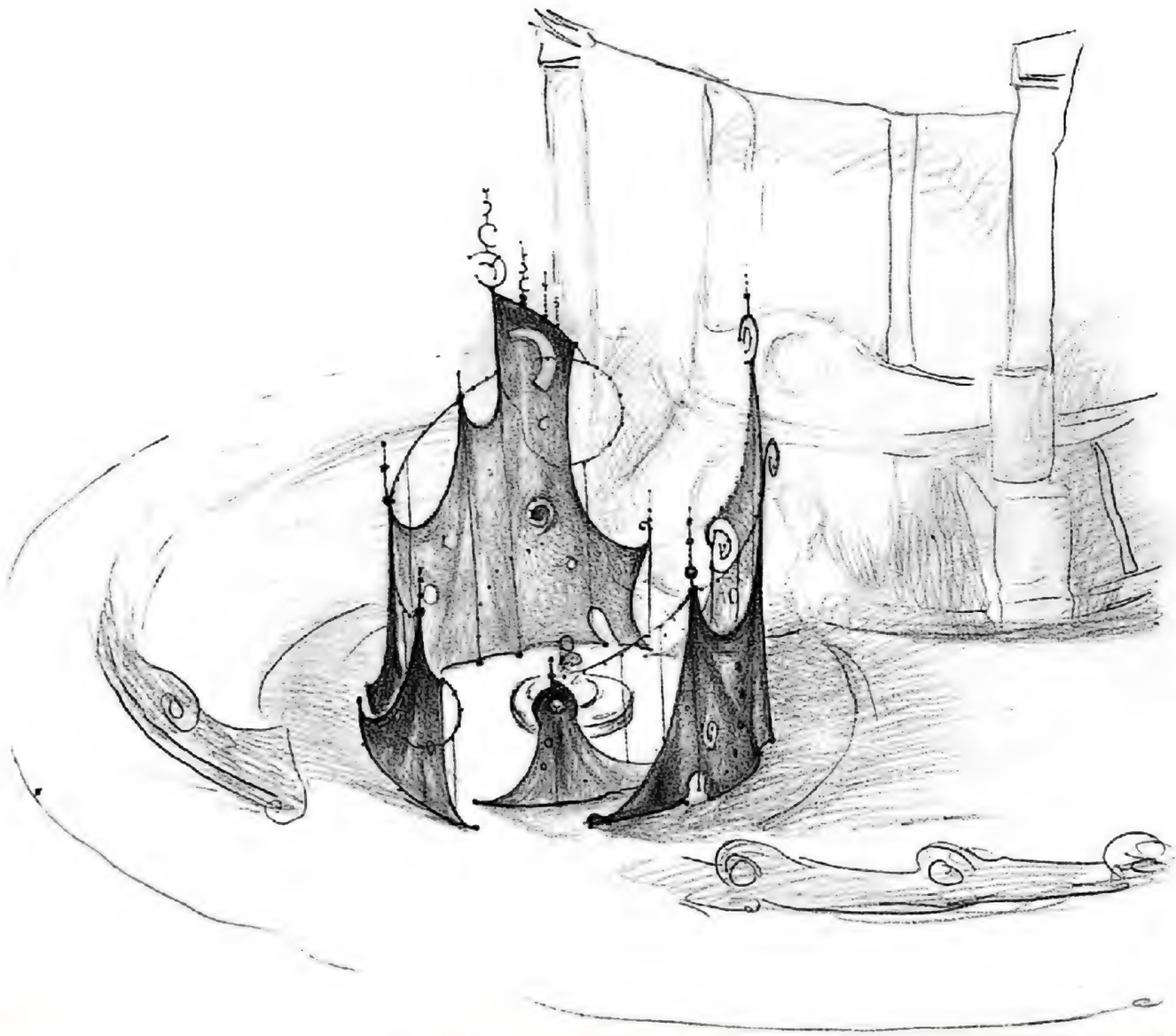
LEADBETTER COLOR CALLOUTS
Vincent Nguyen, 1/2003, Digital

THE EXECUTIVES
Greg Couch, 2002, Pencil, 25 x 10

THE PARTY

The tent is a little Cirque du Soleil, a little Santiago Calatrava, a little Christo. The initial drawing I did was too complicated—we needed a couple of repeating shapes instead of a bunch of different forms, which I think helped the design. It's another example of our limitations actually helping the movie.

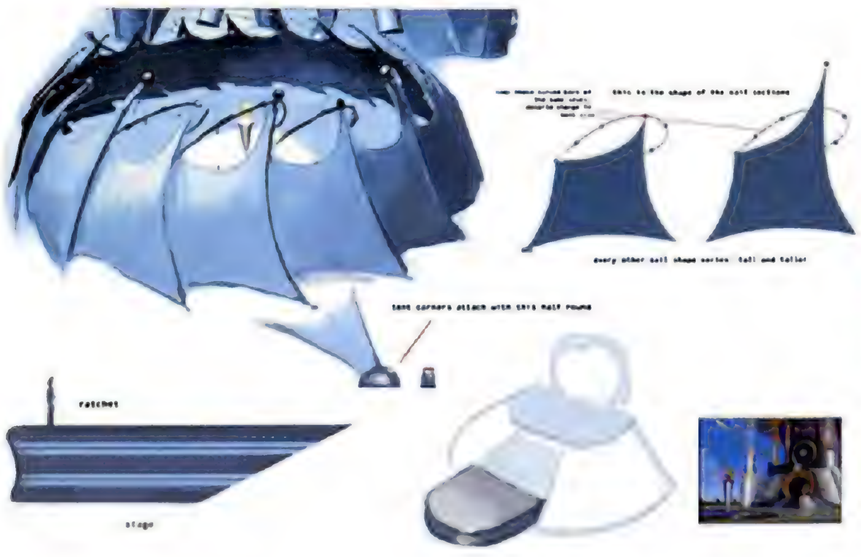
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

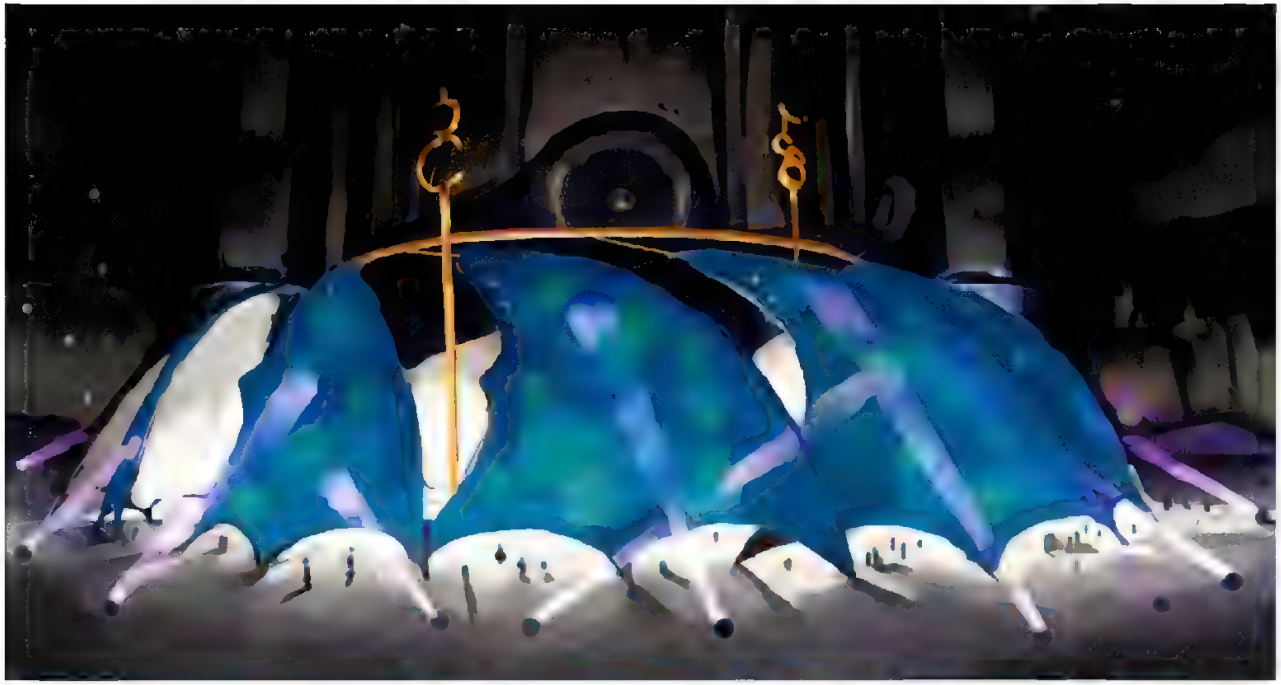


Clockwise from top:
PARTY SET
Bill Joyce, 2002, Pencil, 9 x 8

PARTY COLOR CALLOUTS
Dice Tsutsumi, 2003, Digital

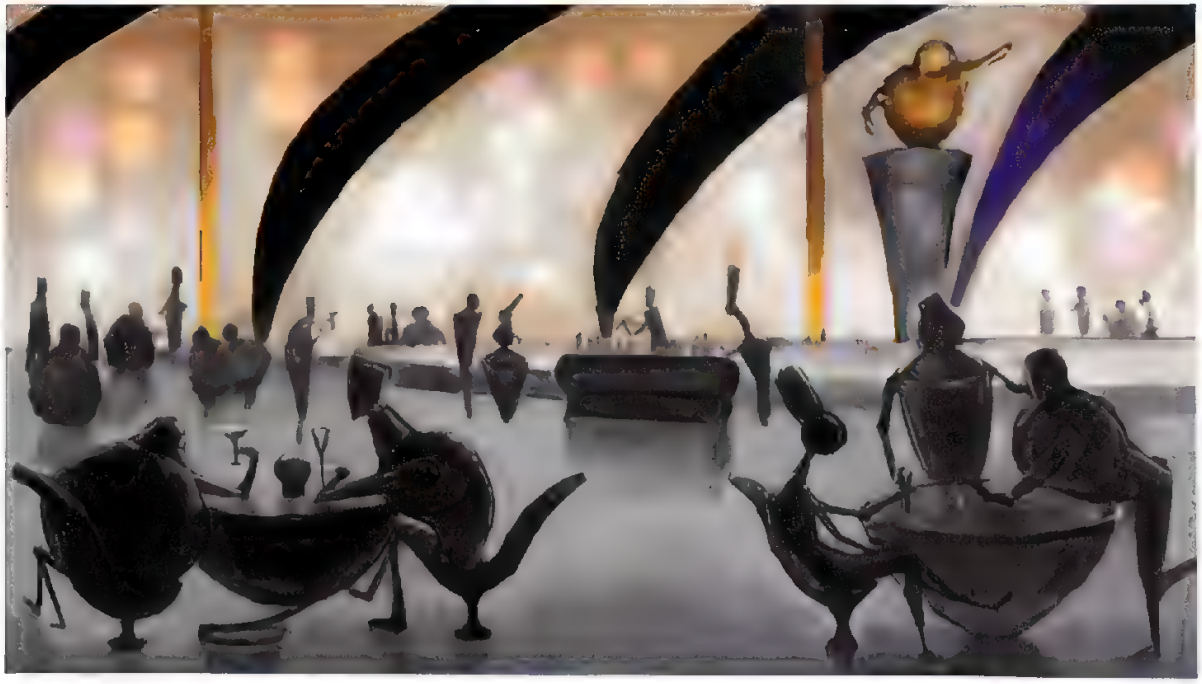
PARTY DETAILS
David Gordon, 4/2003, Digital

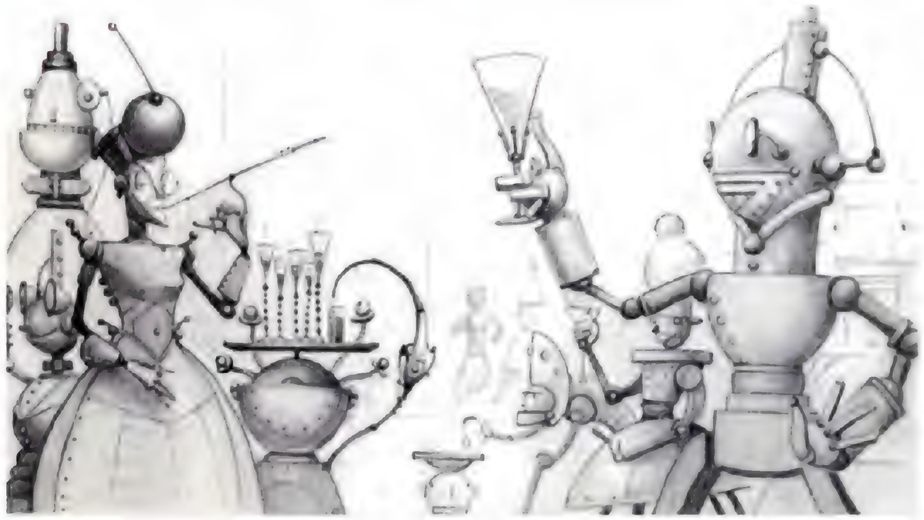




PARTY SET – EXTERIOR
David Gordon, 4/2003, Digital

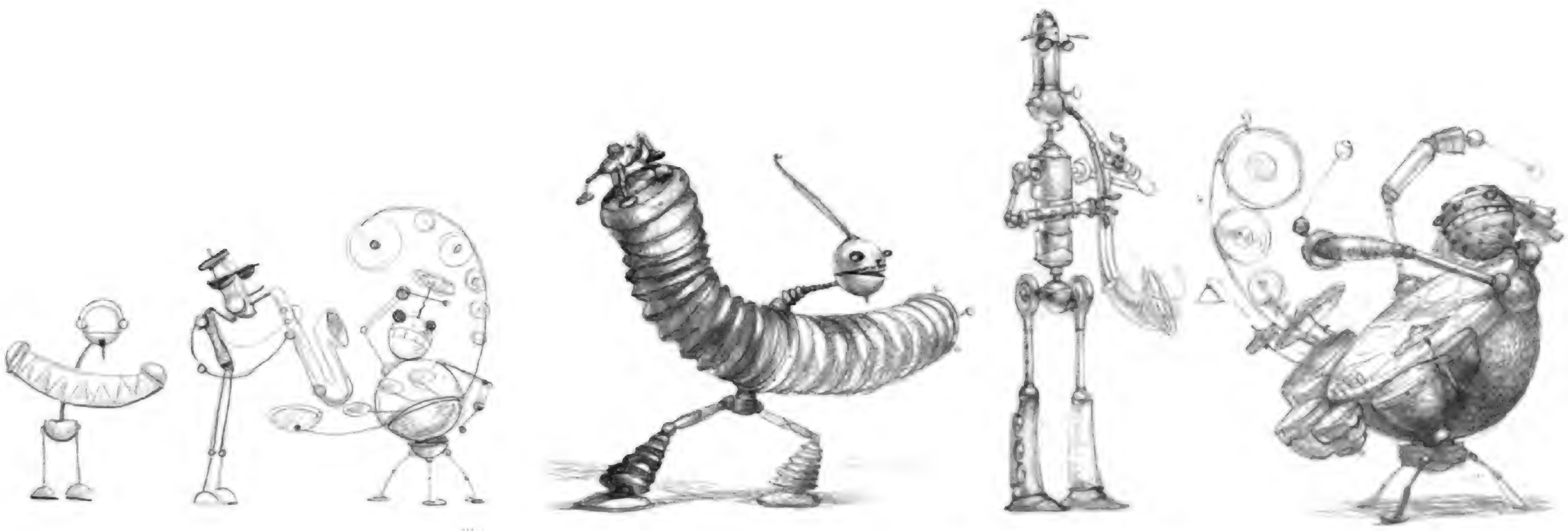
PARTY SET – INTERIOR
David Gordon, 4/2003, Digital





When I first started meeting with Blue Sky years ago, there was something about how their stuff looked that appealed to me. Photographic isn't the right word—it felt like another world. My stuff's always about the way light saturates things and where shadows fall, and a lot of that came from old Technicolor films, the graininess and the diffusion. If you look at *The Red Shoes* or *Gone with the Wind* or *The Wizard of Oz*, it's film and they photographed them, but they look painterly and slightly unreal, like they're removed from our world. They almost feel animated. Chris and I found that we shared this love of Technicolor, and that it had even been part of the way they programmed their renderers.

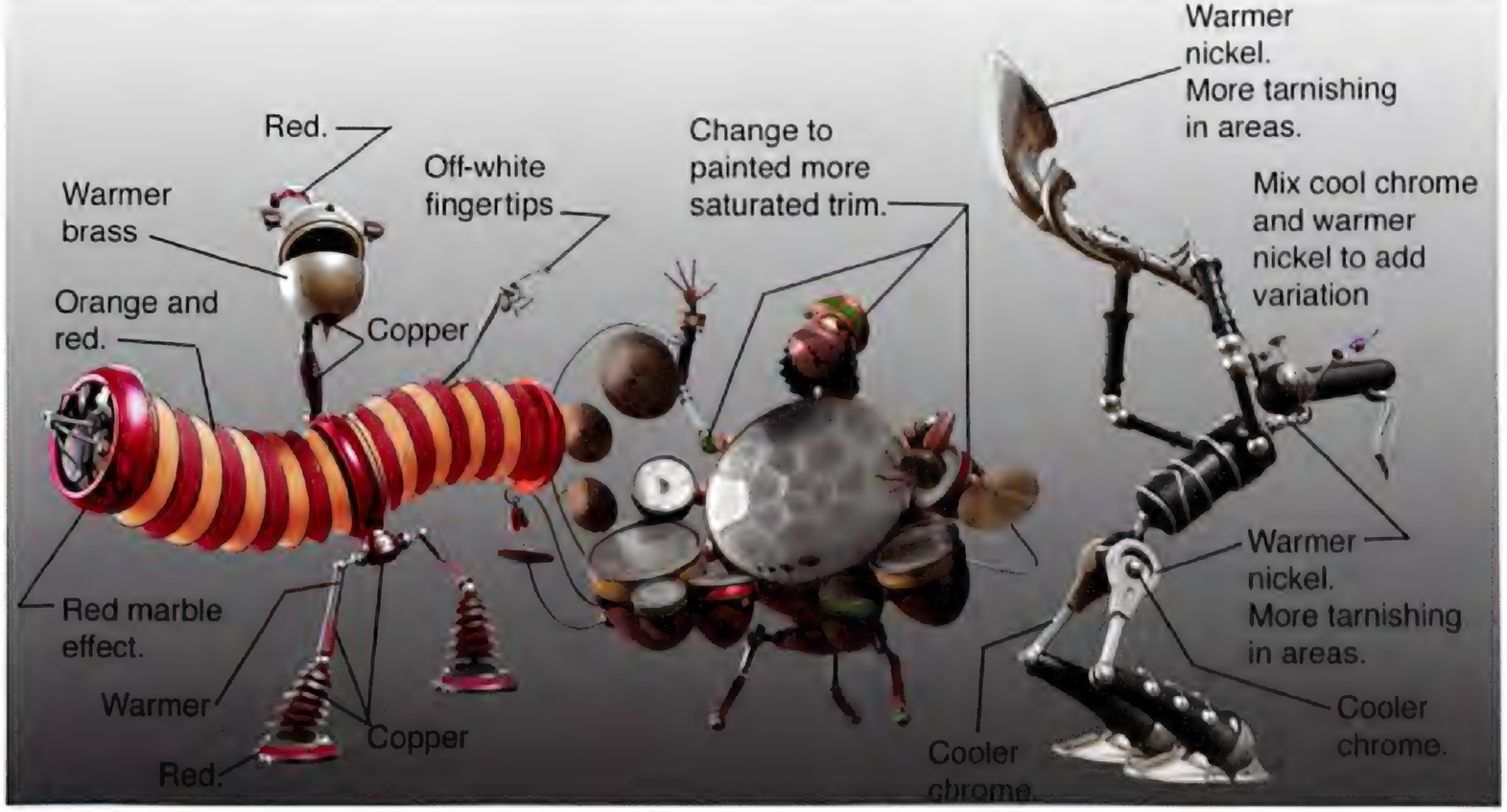
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



Above: BAND
Bill Joyce, 2002, Pencil, 10 x 15

Top right: BAND
Greg Couch, 2003, Pencil, 20 x 10

Bottom right: BAND COLOR CALLOUT
Thomas Cardone, 2004, Digital



Opposite top: PARTY SET COLOR KEY PANEL
Dice Tsutsumi, 2004, Digital

Opposite bottom: PARTY SCENE
Bill Joyce, 2000, Pencil, 11 x 8½

RODNEY AND THE RUSTIES
Dice Tsutsumi, 2002, Digital

THE FILMMAKERS PAID CAREFUL ATTENTION TO COLOR AND lighting in *Robots*, as two aspects of the whole with much power to contribute to a consistent emotional believability. Both the characters and the teeming backgrounds, with all their opportunities for dramatic lighting setups, were color-scripted to maintain consistency and a persistent sense of whimsy and fun.

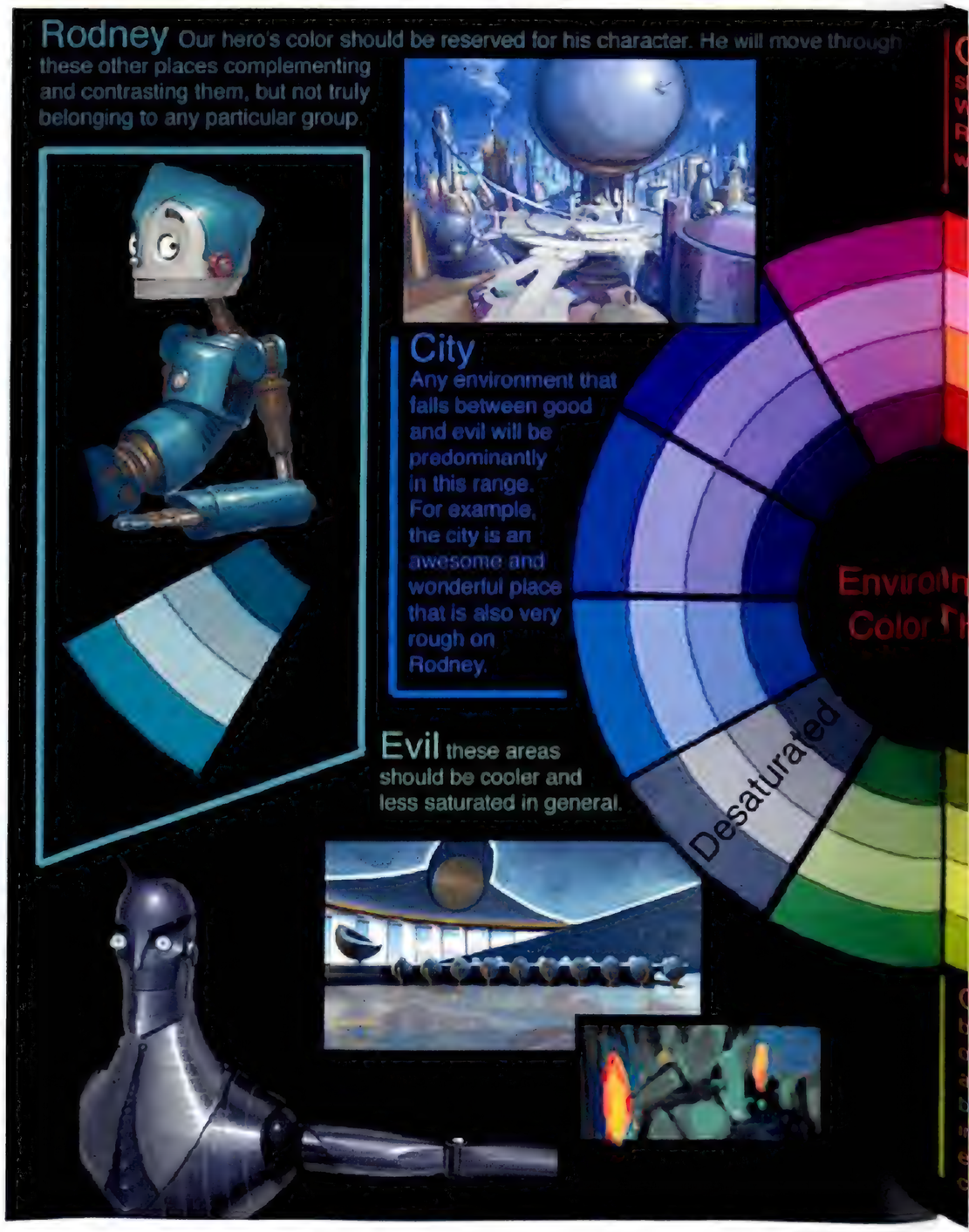
Chris Wedge's byword for the artists regarding the use of color in *Robots* was simple: "A carnival of color." Metal being metal, there's not much variety in chromatic value amongst the metallic elements of the periodic table. But the steel and aluminum of the all-metal robot world, like ours, is not just naked; there's paint everywhere, opening up endless possibilities for color styling. The filmmakers were careful to make sure that each location had a distinct personality, and the exacting application of color was crucial in defining the unique worlds.

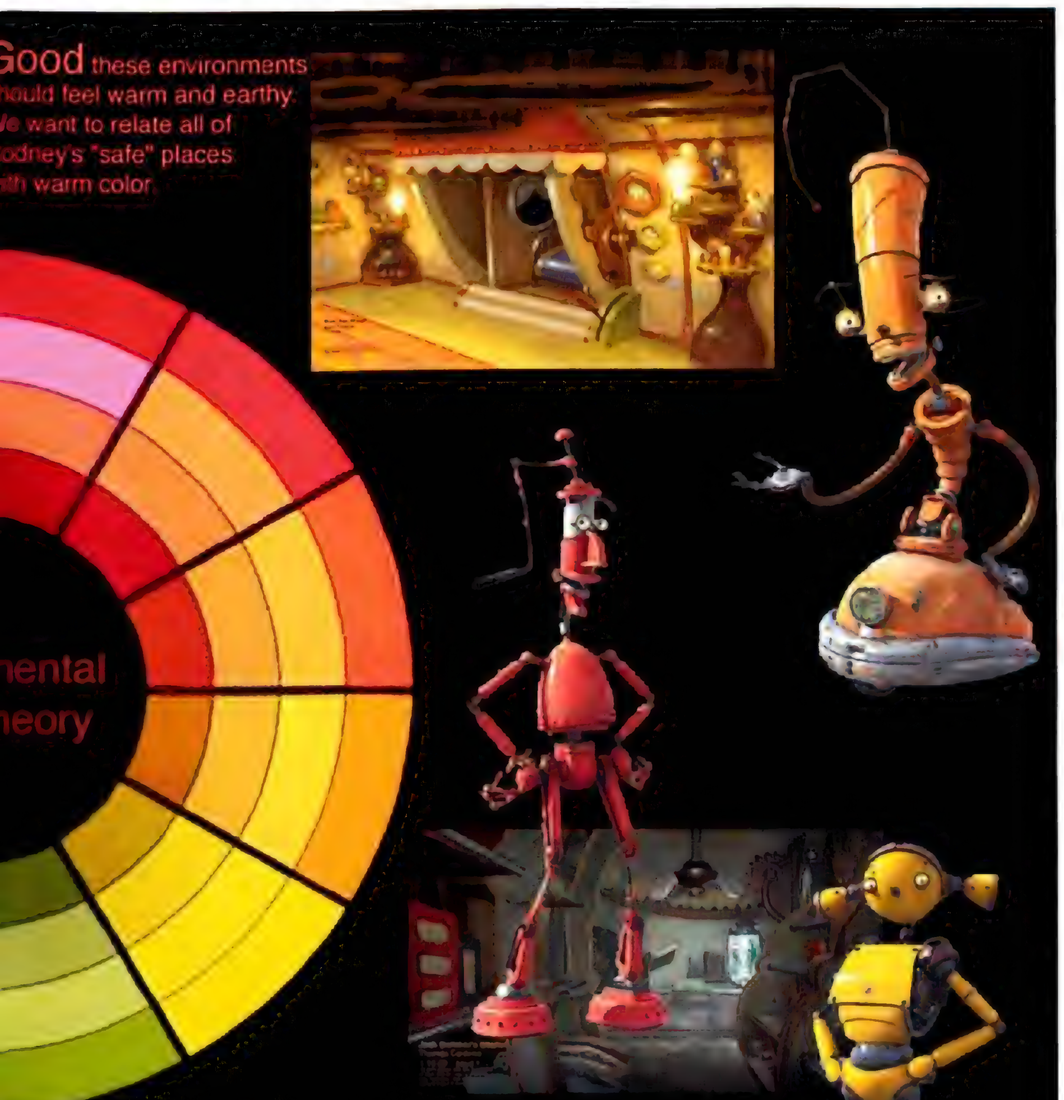
Judicious color choices can communicate not just the tone of a scene but the personality and even history of a character, all in the single second it takes to make a first impression. In a robotic environment like the home of the jovial Aunt Fan, a loving soul who provides a home for the Rusties, the bright, saturated, nearly psychedelic colors bring awareness of underlying mood and the inner life of the characters to the audience. Aunt Fan's habitat stands in stark contrast to the uniform sleekness of the High-End parts of Robot City. Bill Joyce compares it to the difference between the colorful exuberance of New York's Greenwich Village and the "tyranny of taupe" that one encounters in midtown Manhattan.

The Rusties—Fender, Crank, Piper, Diesel, and Lug—the long-term tenants of Aunt Fan's home, are also boldly colored. "Even though they're falling apart, the Rusties still have this lively quality, and they're enjoying their lives," says color stylist Dice Tsutsumi. "They're not slick and new like the High-Enders; they're fun, friendly robots." In the case of the Rusties, color reflects their vitality.

To help guide the crew's overall approach to color, Thomas Cardone, Color Stylist, created a color wheel that identified the chromatic properties of the film's many environments. Locations that were friendly to Rodney, like Rivet Town and Aunt Fan's home, were assigned bright red and orange hues; evil areas like Madame Gasket's Chop Shop took on cool monochromatic greens and blues; and Robot City, straddling the line between good and evil, was rendered in colors in the blue and red-violet range. Turquoise, a color that would complement and contrast with all the movie's locations, was reserved for Rodney.

Below: COLOR THEORY
Thomas Cardone, 2002, Color Stylist





The physical qualities of light played a similarly important role in defining the personalities of the characters and locations. Unlike *Ice Age*, which relied primarily on natural light sources, the world of *Robots* is rich with artificial light sources; light emits from buildings, machines, and props. It even radiates out of characters—Madame Gasket has lights inside her body, giving her a semi-transparent effect.

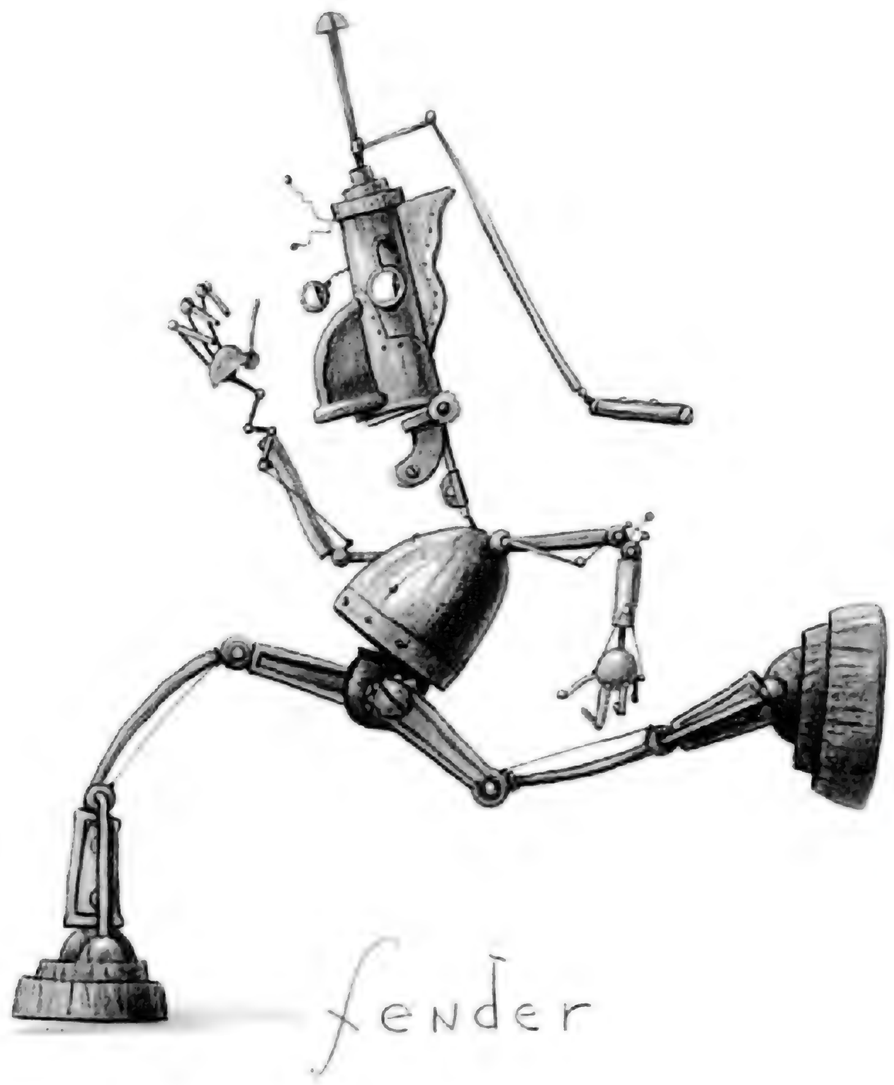
The array of light sources in *Robots* gave the Blue Sky team ample opportunity to show off the techniques that gave the studio its name: the interaction of light and atmosphere. "The atmospherics in *Robots*, like steam, haze, and smoke, give one a sense of space and depth, and as a result you get a much grander sense of scale," explains Carl Ludwig, Vice President, Research and Development. "That's one thing in particular that distinguishes our images—this feeling of space. The subtlety and nuance of the way light plays over a surface defines an object's dimensionality, and that's something that we do really well at Blue Sky."

Above, left to right:
FENDER INTRODUCES RODNEY TO AUNT FAN
2004, Production Still

BIG WELD INDUSTRIES BOARDROOM
2004, Production Still

MADAME GASKET AND RATCHET IN THE CHOP SHOP
2004, Production Still

FENDER



As the characters came out of design and modeling into animation, we did a bunch of animation tests to see how far we could push them in creating this world. A lot of gags came out of that. The thing with Fender losing his parts came out of a Mike Thurmeier test where Fender loses his head, and we loved it so much we created a sequence around it. That actually became a big discovery for Fender's character. You start with gags, and as you go along you discover the way a character blinks, the way he talks, all those little subtleties. As you progress with a movie, you keep discovering the soul of a character.

CARLOS SALDANHA, CODIRECTOR

Above left: FENDER
Bill Joyce, 2002, Pencil, 11 x 13

Above right: FENDER
Shaun Cusick, 2002, Digital

Right: FENDER SURPRISED BY LAMPPOST
2004, Production Still

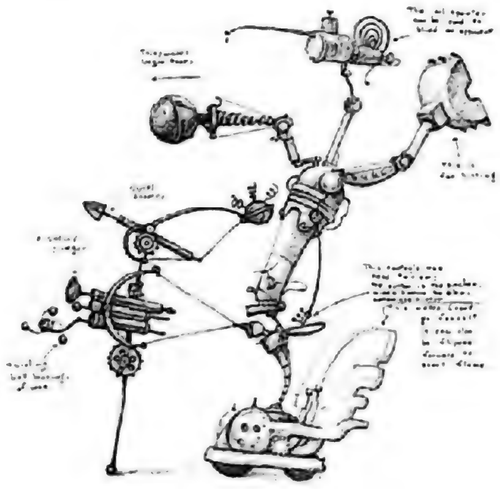
FENDER
2003, Final Render

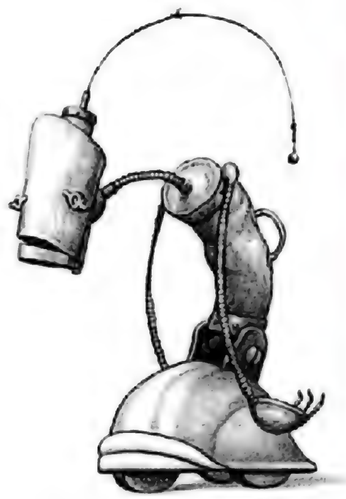
"Transgender Fender" was embarassingly fun to work on. It was a chance to take Fender and make him seem as awkward as possible on heels.

GREG COUCH, DESIGNER

FENDER FEMBOT
Greg Couch, 2003, Pencil, 8½ x 16

CRANK CASEY AND PIPER PINWHEELER





Bill Joyce had done the initial drawing of Piper. We knew that she was sort of like a gangly tomboy, but beyond that, her character hadn't been very well defined in the script at the time that I designed her. So in the design I was trying to define her character and give her as much potential as I could to give the writers something to play with. We didn't want to make her overly rusty or aged because we didn't want to depress everybody with a completely dilapidated little girl. It was more like casually rusty, and we used the exposed shocks in her legs and the small engine built into her torso to highlight her mechanical nature. Carlos [Saldanha] had the great idea of having her shoulder strap keep falling off to the side so she was constantly playing with that like a teenager would.

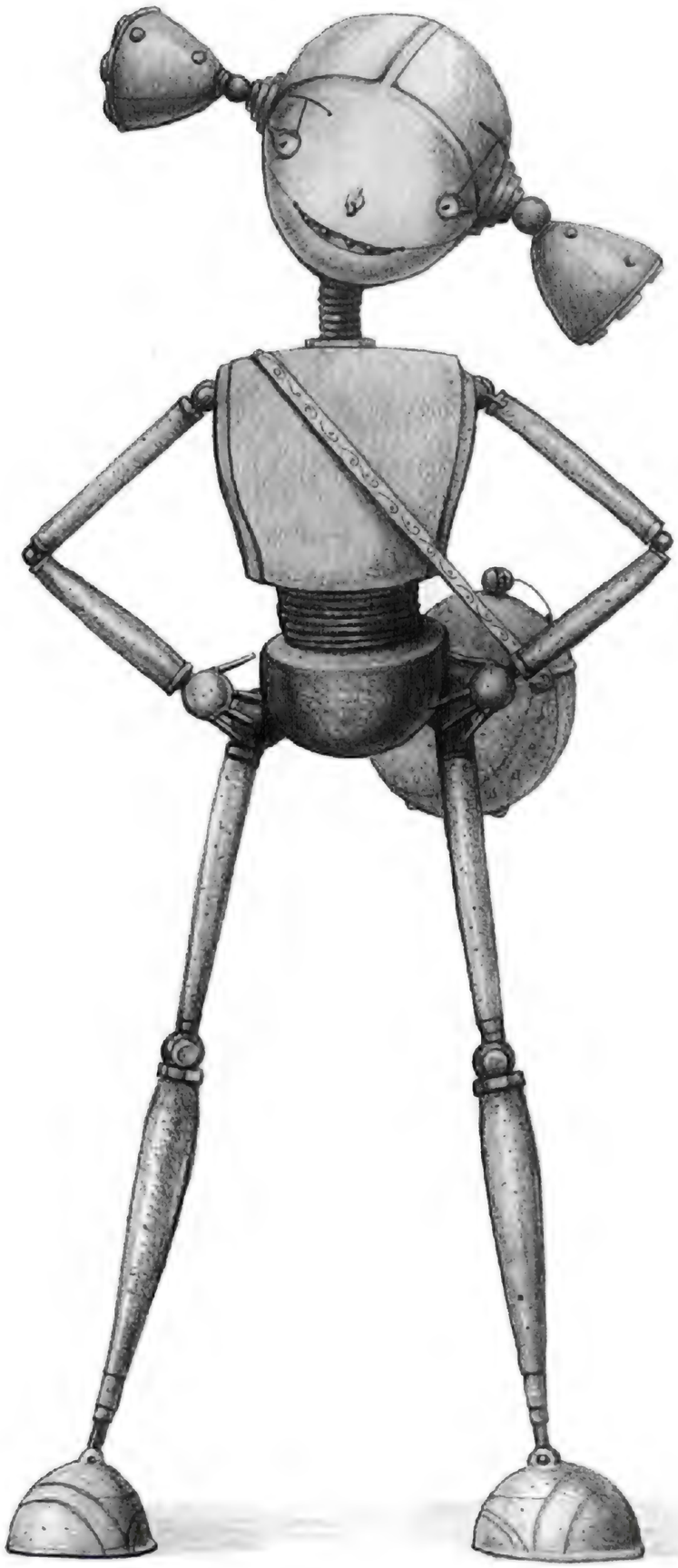
MIKE KNAPP, DESIGNER

Top, left to right:
BATTLE CRANK
Bill Joyce, 2002, Pencil, 11 x 17

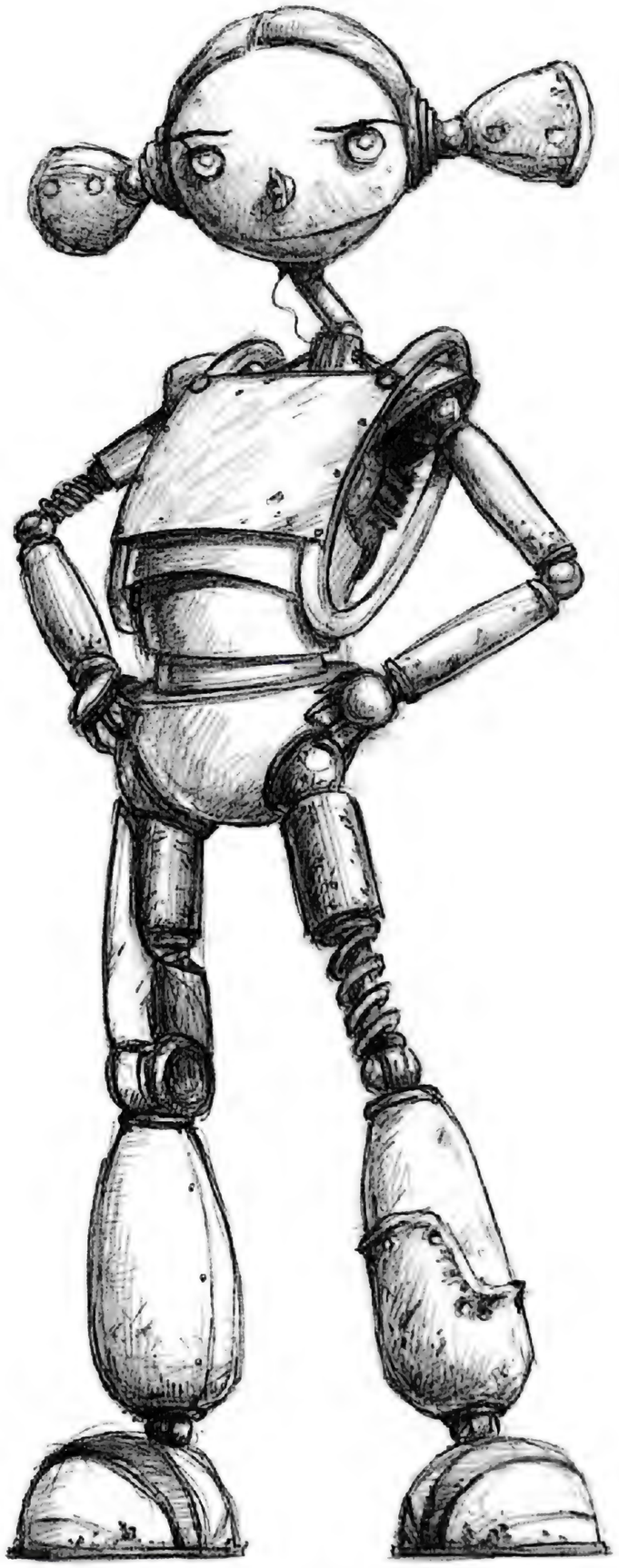
CRANK
Bill Joyce, 2000, Pencil, 11 x 17

CRANK
Shaun Cusick, 2001, Digital

CRANK
2003, Final Render



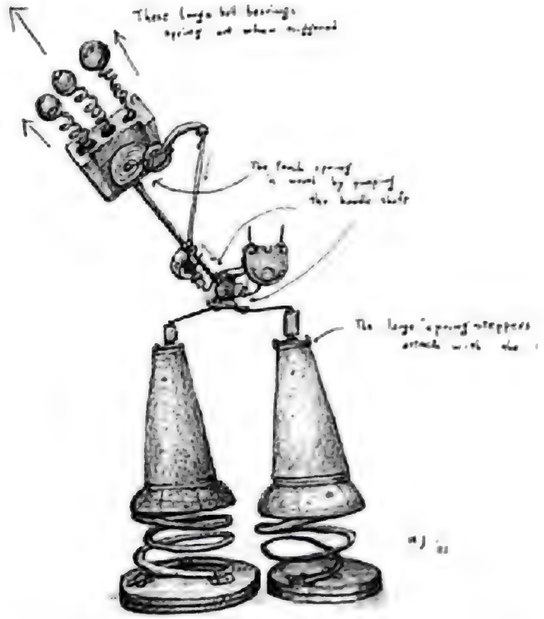
PIPER
Bill Joyce, 2000, Pencil, 11 x 17

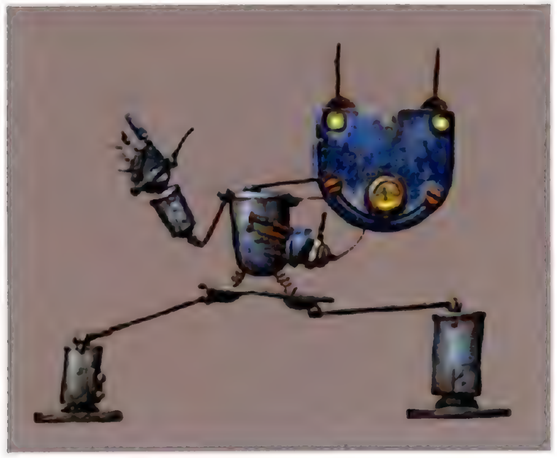


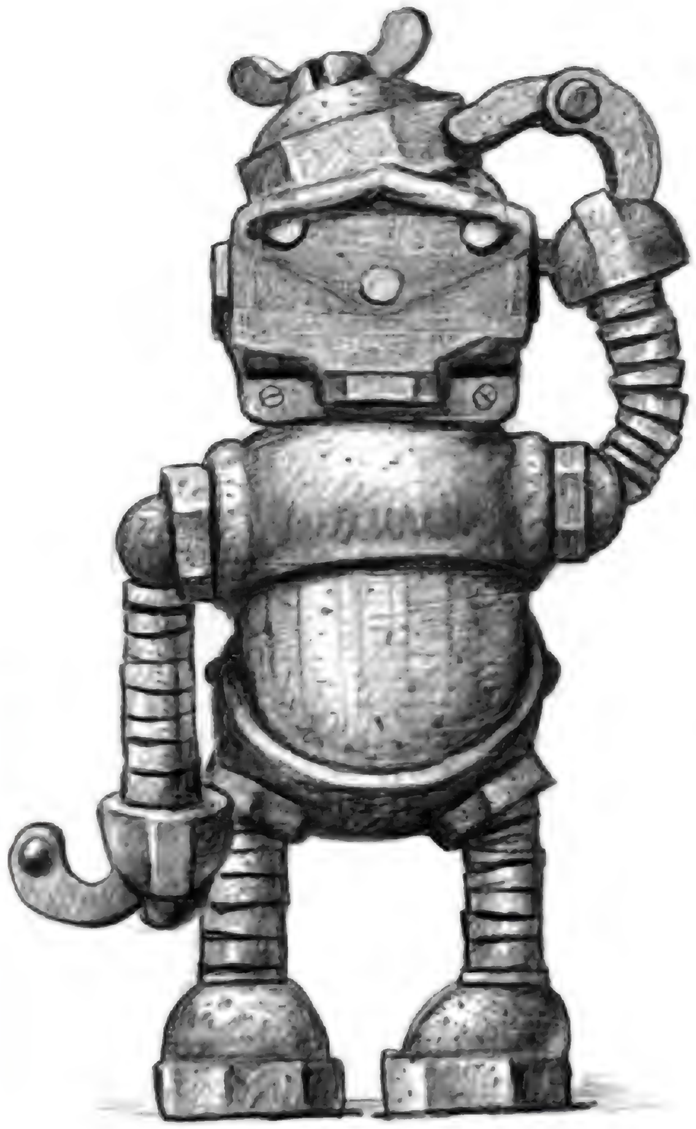
PIPER
Michael Knapp, 2002, Pencil, 10½ x 16

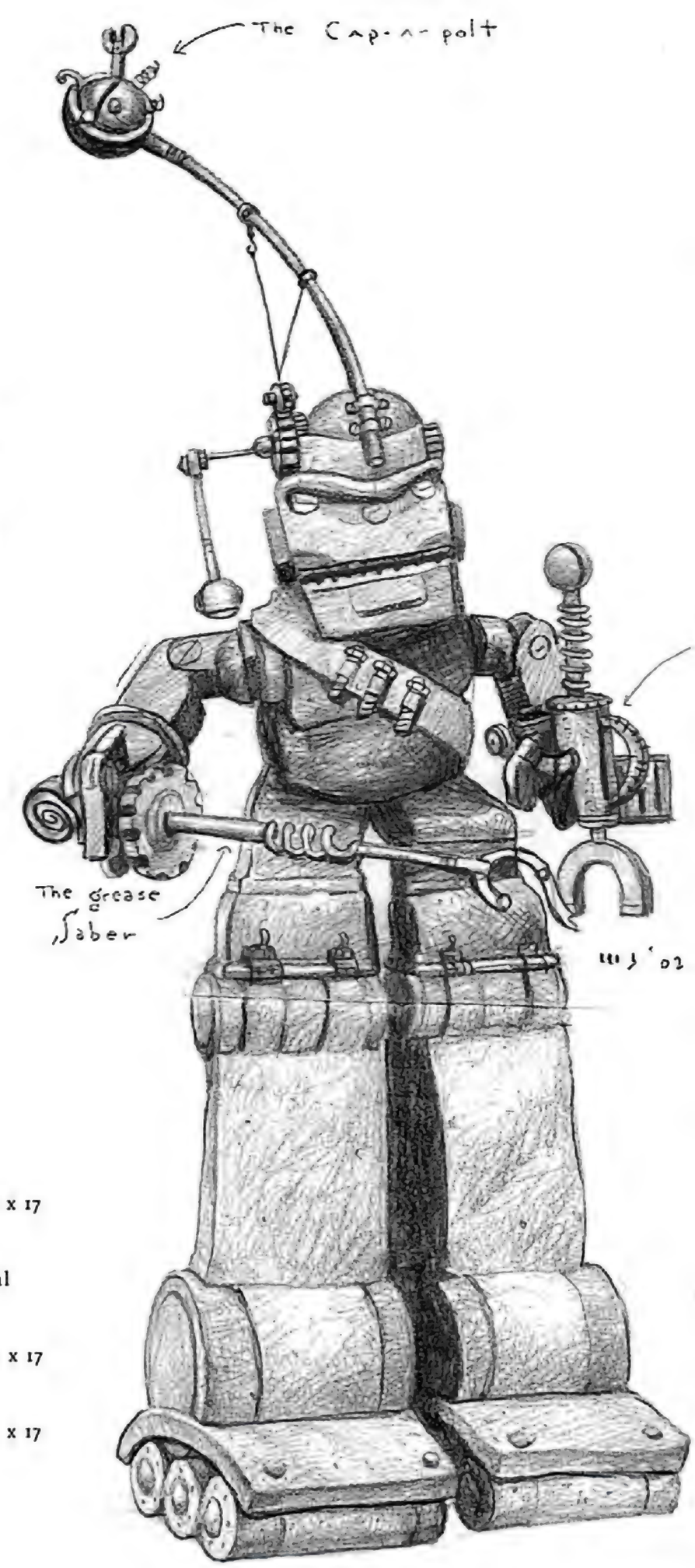
PIPER
2003, Final Render

DIESEL SPRINGER AND LUG









On the rigging end, you're looking at the designs and trying to guess how flexible a character is going to be and what problems it might pose for the animators. Lug was funny because in the design meetings Chris Wedge would say, "No, it doesn't have to be flexible. Inflexibility is funny." I'm like, "That's cool." And then literally the first boards I got showed Lug in a yoga pose.

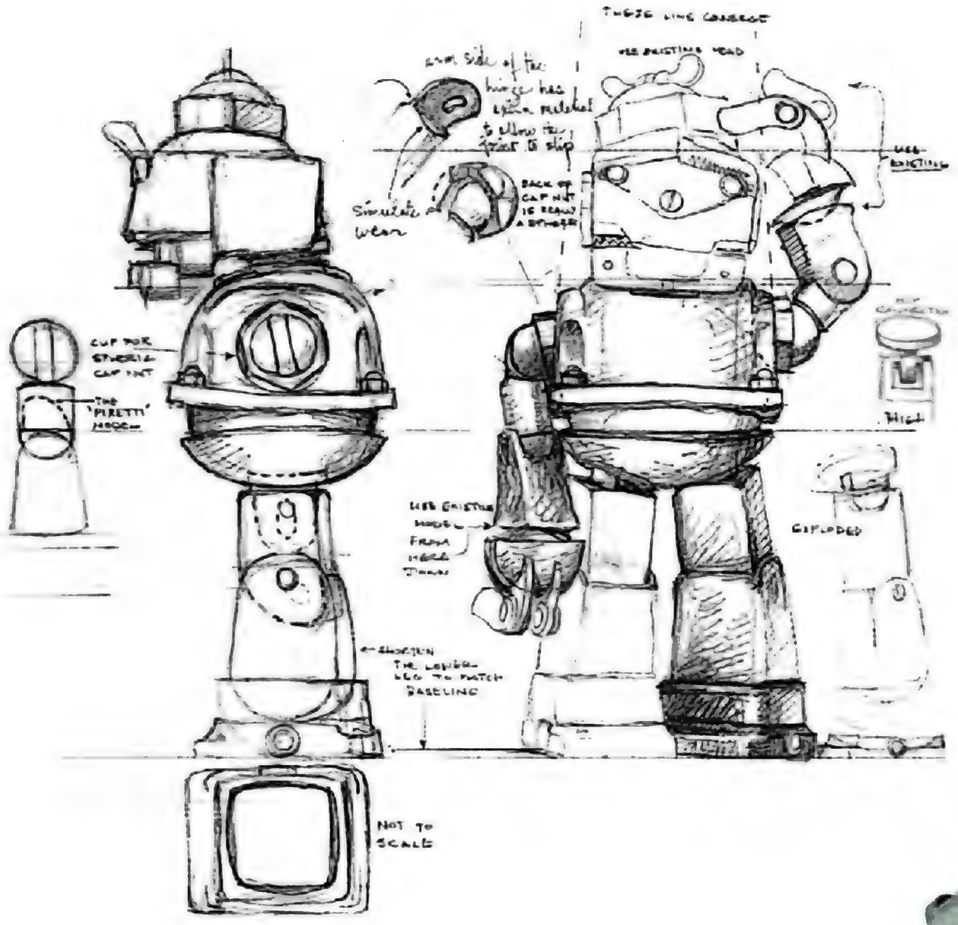
MARK PIRETTI, RIGGING LEAD

Top left: BATTLE DIESEL
Bill Joyce, 2002, Pencil, 11 x 17

Bottom left: DIESEL
Shaun Cusick, 2001, Digital

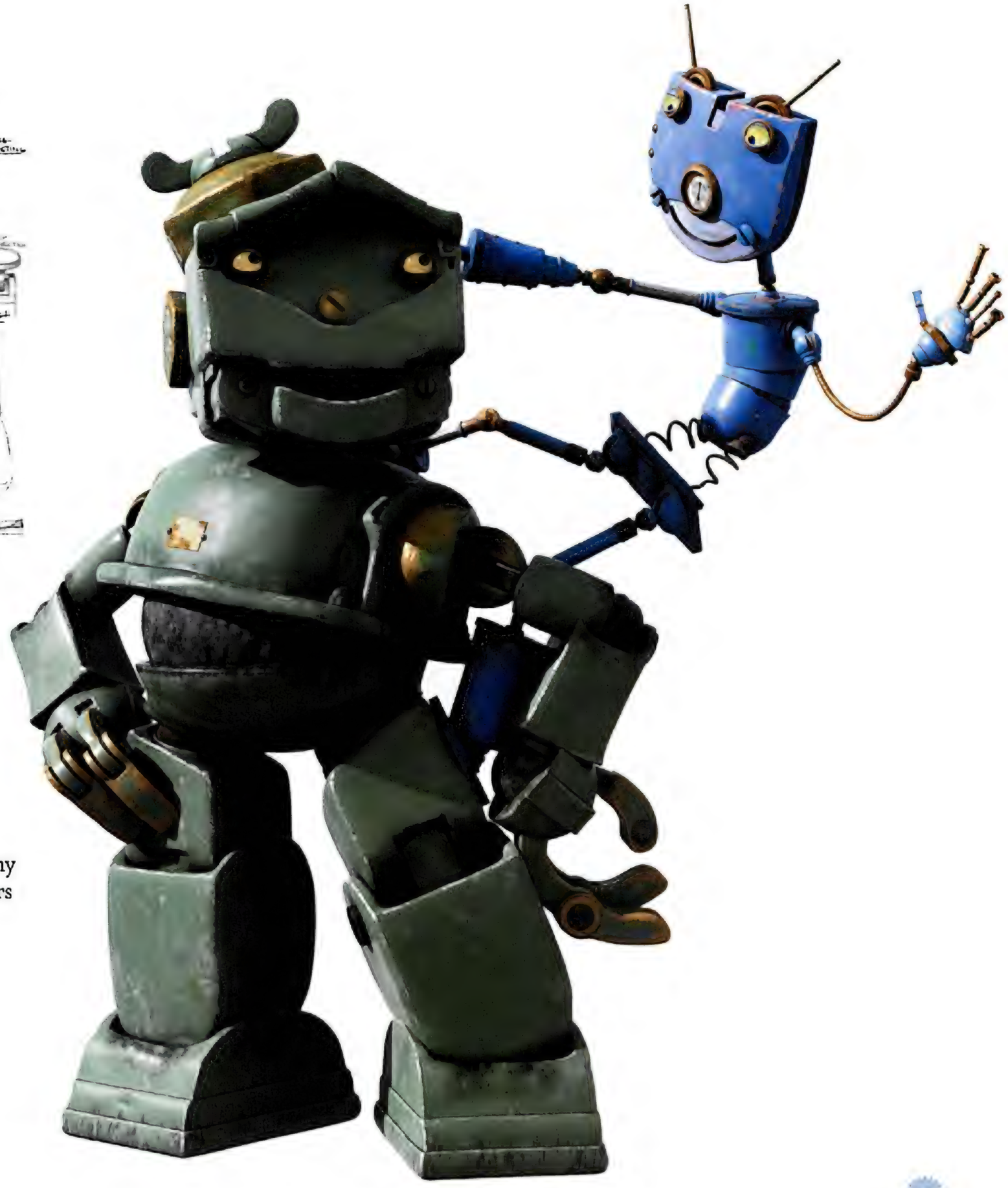
Above: LUG
Bill Joyce, Pencil, 2000, 11 x 17

Right: BATTLE LUG
Bill Joyce, 2002, Pencil, 11 x 17



Above: LUG BREAKOUT
Greg Couch, 2002, Pencil, 10 x 10

Right: LUG & DIESEL
2003, Final Render



What is interesting is that while the Rusties are funny characters, they also find themselves as the characters who are in the greatest peril in the film.

CHRIS MELEDANDRI,
PRESIDENT OF FOX FEATURE ANIMATION

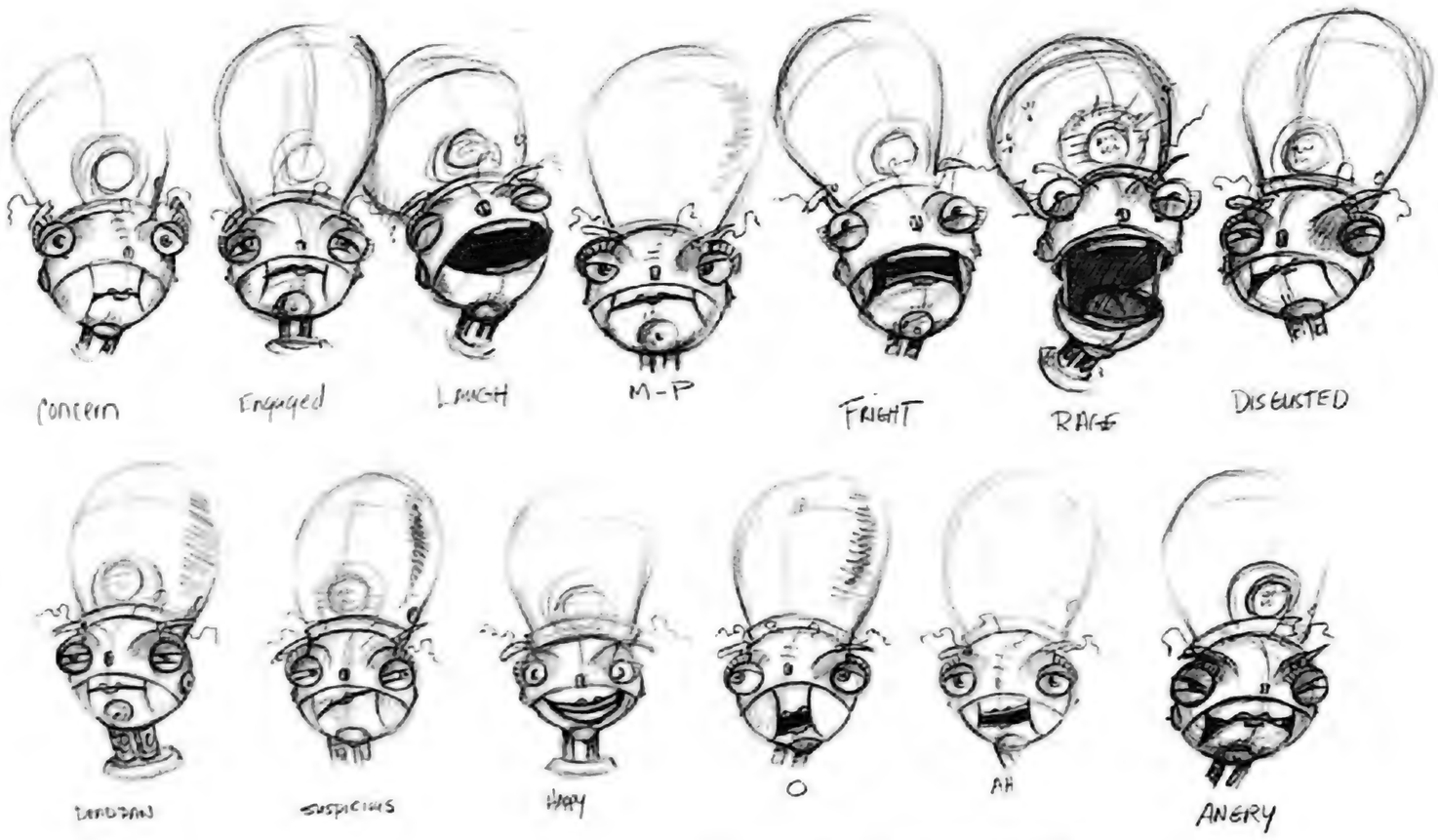
AUNT FAN

She was described in the script as having a big ass. I kept thinking of this jiggly school principal of mine with high hair. Her arms were so fat, when she waved them they swayed. For a while, Aunt Fan had large breasts too—they'd open up and she'd pull stuff out. I was living in Berkeley at the time, and Chris was saying "She hoards junk. She can't throw anything away." And I said, "Ah, she's one of those Berkeley ladies with Birkenstocks that I see all over the place."

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

At one point she was starting to feel too 1940s, too Aunt Bea. Chris came into a meeting one day and said, "I have a feeling our audience will think of the elderly aunt who took care of them, someone who had her heyday in the sixties. Can we make her a Haight-Ashbury holdover?" So first I looked for machine parts and kitchen appliances from the sixties that felt like Birkenstocks and peasant blouses. Then I thought of sixties cars, and I started looking at Chargers and John Lennon's Rolls-Royce and Ken Kesey's Magic Bus, how they painted it and glued stuff on it. Wedge said, "You turned her into a Tijuana taxi." Eventually we had to pare it back a bit, because it's almost the mechanical equivalent of camouflage. Her house is so chockablock full of stuff that she'd just disappear in it.

GREG COUCH, DESIGNER

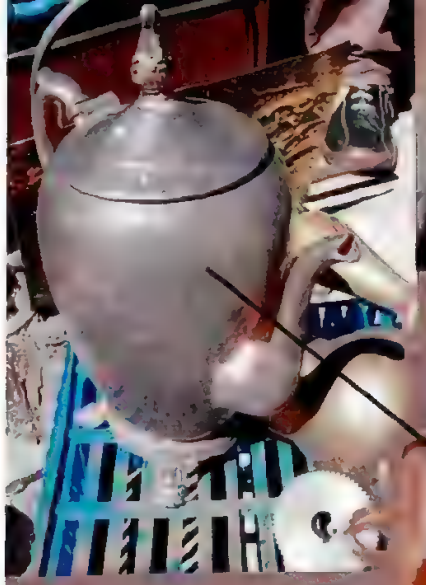


Above: AUNT FAN EXPRESSIONS
Scott Robideau, 2002, Pencil, 12½ x 8

Opposite: AUNT FAN COLOR CALLOUT
Dice Tsutsumi, 8/2002, Digital

Right: AUNT-FAN
Bill Joyce, 2000, Pencil, 10 x 10

Far right: AUNT FAN
2003, Final render



Ceramic like this but
a lot more burned.

Overall Color

Surface would be like t
It is indicated that her
body was painted
many times.

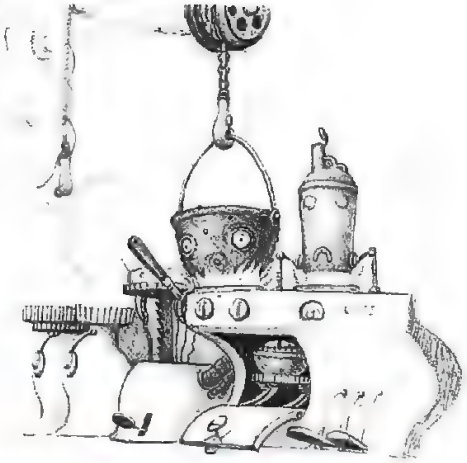
thick paints,
uneven thickness...

This, with a lot
less reflectivity.

Old cast iron skillets(OLD!)
CAST IRON OVEN
Most small kitchen wares are basically copper
Would be great to have a few subtle variations
These are all old!!! (but not dirty)
Give some bump textures on some of them!
(like the picture on the left)
GUAGE(LET'S RECYCLE DIESEL'S!)
BRASS BELL
Serving Window/Wall framing
Cast iron painted in red/orange(should

Chris wanted her place to feel so crammed she's barely got room to move. So everything has to scoop in to accommodate her tits and ass. That was fun to figure out.

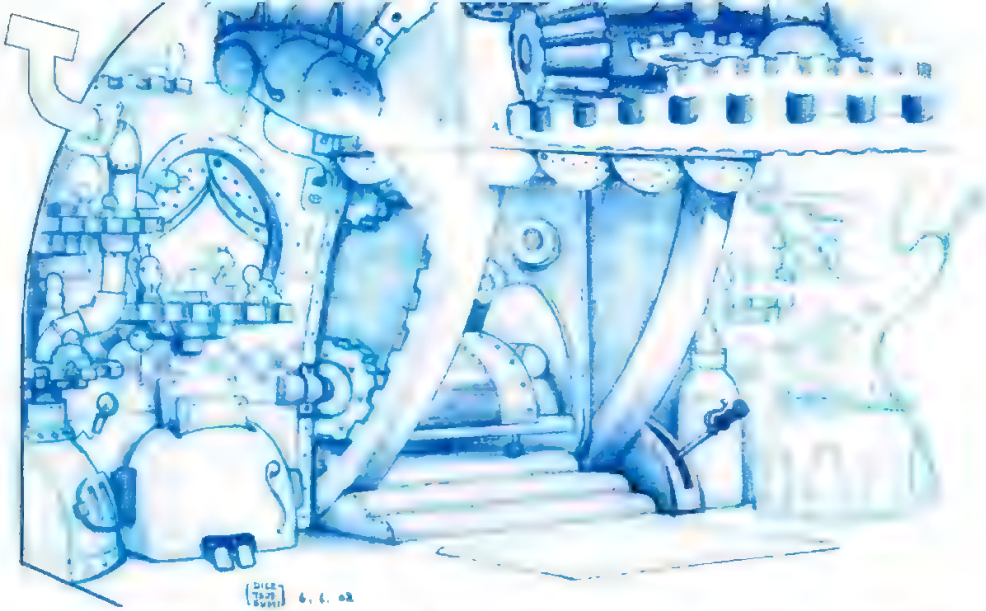
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



Left: AUNT FAN'S KITCHEN STYLE GUIDE
Dice Tsutsumi, 11/2002, Digital

Right: AUNT FAN'S KITCHEN
Bill Joyce, 2002, Pencil, 16 x 10

Below: CONCEPT COLOR FOR AUNT FAN'S HOUSE
Dice Tsutsumi, 2002, Digital



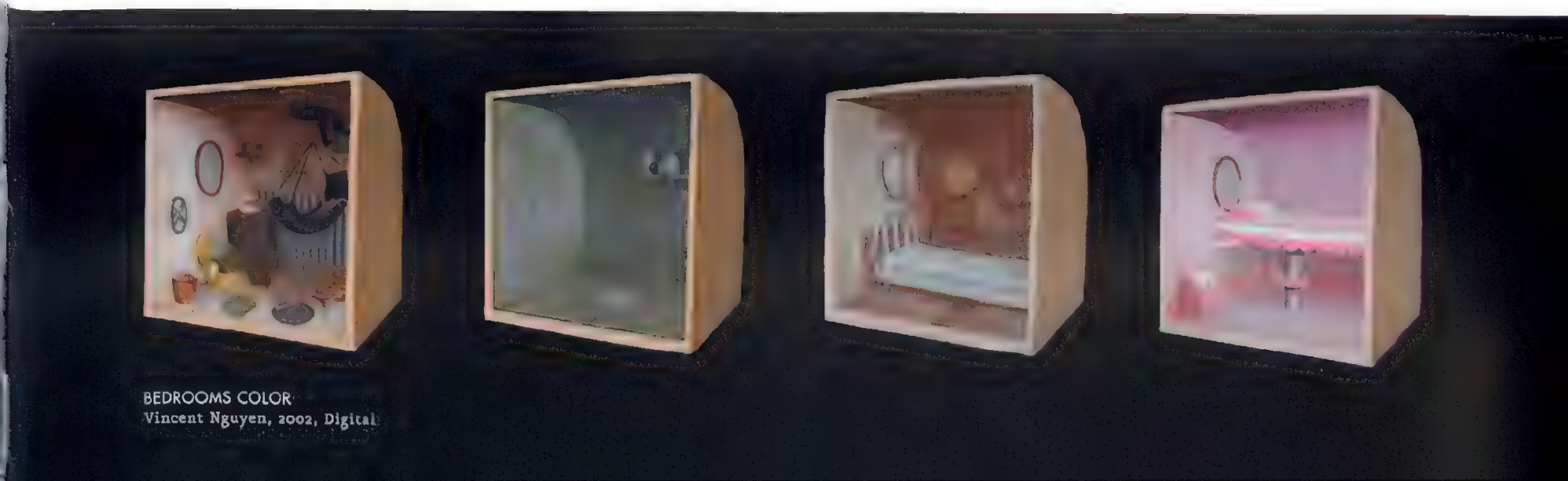
Top: ROTATING BEDROOMS ROUGH COLOR
Dice Tsutsumi, 6/2002, Pencil, 12 x 8

Bottom: CONCEPT COLOR FOR
AUNT FAN'S HOUSE
Dice Tsutsumi, 7/2002, Digital

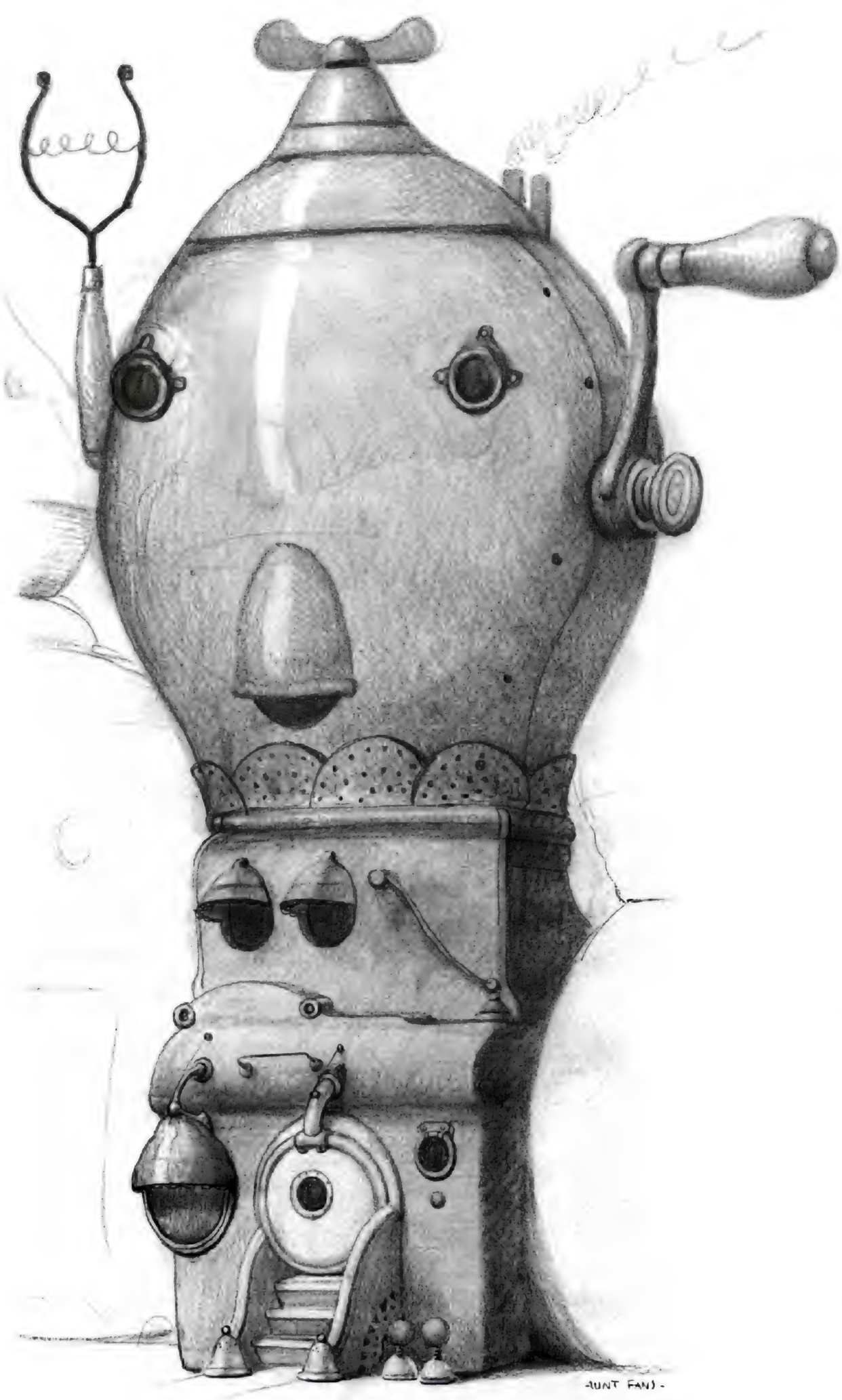
One of the film's biggest color challenges was creating a warm, friendly, soft feeling in a world where everything's made of metal. We didn't want Aunt Fan's house to be a cold environment. We tried a bunch of different techniques—we used vintage enamel colors like green and cream, we used friendly patterns and rounder shapes. With the right color and material and lighting, the metal could still read as happy.

DICE TSUTSUMI, COLOR STYLIST

PIPER'S ROOM
Greg Couch, 2003, Digital



BEDROOMS COLOR
Vincent Nguyen, 2002, Digital



We cobbled together Aunt Fan's house out of pieces that we had already modeled. We just pulled different parts out of our backlot and started tacking them onto the top of this one building to create a silly looking house that Aunt Fan would live in.

MIKE KNAPP, DESIGNER

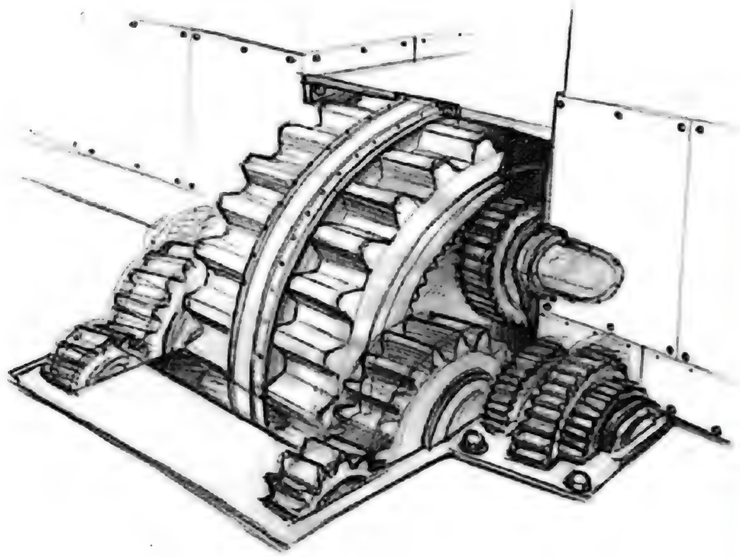
There was another eureka day when we went, "Wait a minute . . . blow up Rodney's arm, put a bunch of windows on it—it's a building!" A lot of buildings are blown-up pieces of characters' bodies. Budgetarily, we really could only do simple shapes and dress them with stuff that already existed.

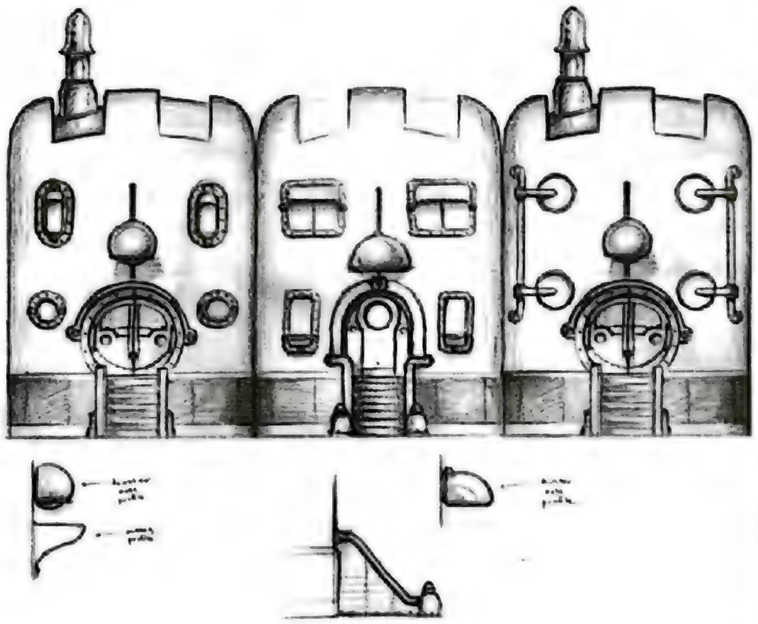
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

There's a building in the film that we call Cappy's Leg.

MIKE ERINGIS, MATERIALS LEAD

AUNT FAN'S HOUSE
Bill Joyce, 2002, Pencil, 14 x 21

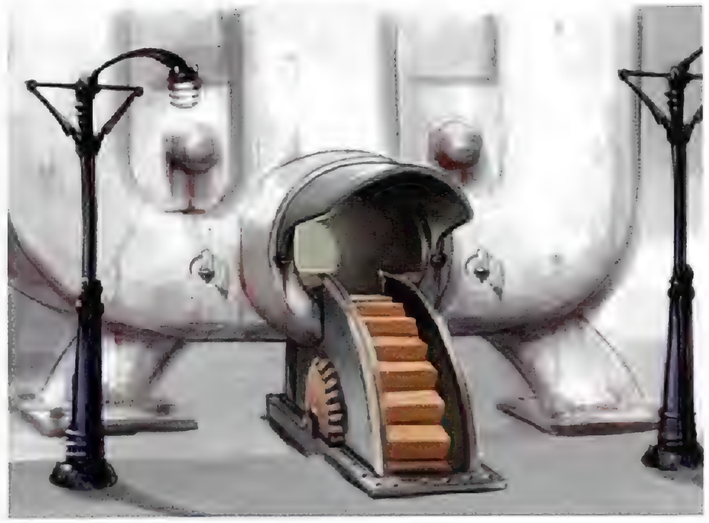




Top: GEAR ESCALATOR
Michael Knapp, 2002, Pencil, 14 x 11

Bottom: BROWNSTONE TOASTERS
Michael Knapp, 2002, Pencil, 13½ x 10

Right: AUNT FAN'S EXTERIOR
Thomas Cardone, 2003, Digital



Above: ZINC'S STOOP
Michael Knapp, 2002, Digital

Left: LOW-END ROBOT CITY
Michael Knapp, 2001, Pencil, 9 x 11

The only inspirational field trip we've taken on this movie has been to the junkyard.

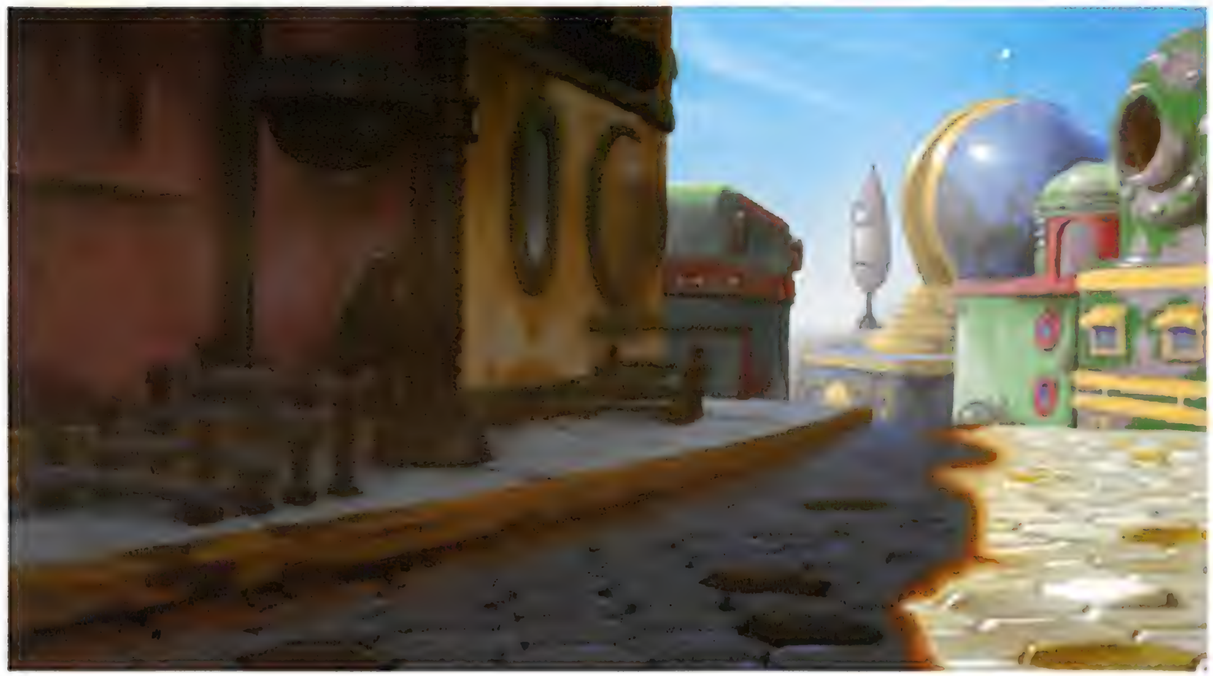
CHRIS WEDGE, DIRECTOR

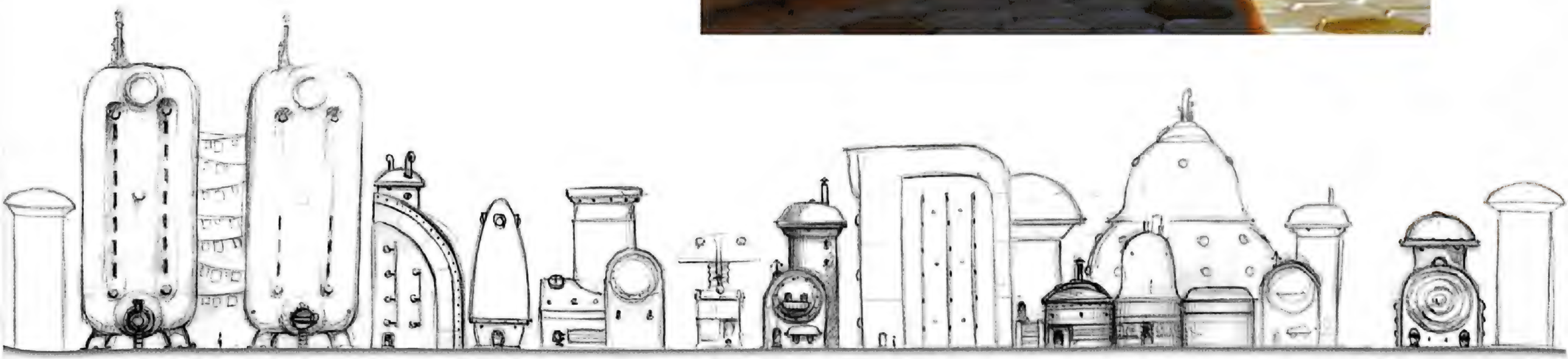
OLD RADIATORS
Junkyard Photo

Top right: RUSTBUCKET HOTEL COLOR ROUGH
Thomas Cardone, 2003, Digital

Lower right: THE RUSTIES' NEIGHBORHOOD
Dice Tsutsumi, 2002, Digital

Below: LOW-END NEIGHBORHOOD
Michael Knapp, 2002, Pencil





Doors are smooth painted metal. Red paint is faded unevenly by the sun, almost down to the primer in some spots and bleaching out the saturation in others.

Sign is old white paint that has yellowed, with red painted on letters and a light blue drop shadow. Some rust in corners where paint is chipped off and some rust streaking down from screws.

Rusty metal vent, and base under windows.

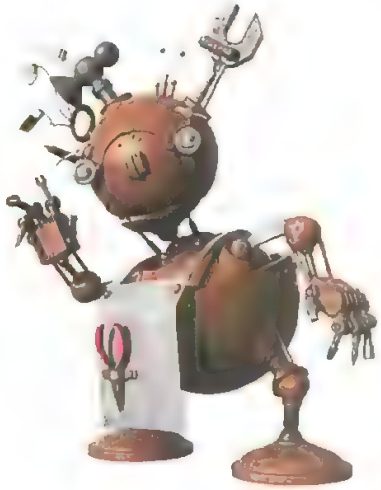
Tarnished brass kick plate.

JACK HAMMER'S EXTERIOR COLOR CALLOUTS
Thomas Cardone, 1/2003, Digital

Old faded painted metal. Bleached by sun. Some primer and faint rust show through the paint. Same material as described on page another example.

This was one of the first locations that we designed. There are bits and pieces of musical instruments—the awning came from clarinet valves. It's the robot version of a general store, with all the little things hanging around. But he's also started carrying upgrades, so there's this one aisle in his store that's all shiny and chrome, and doesn't have the cheerful clutter of the rest of the store.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

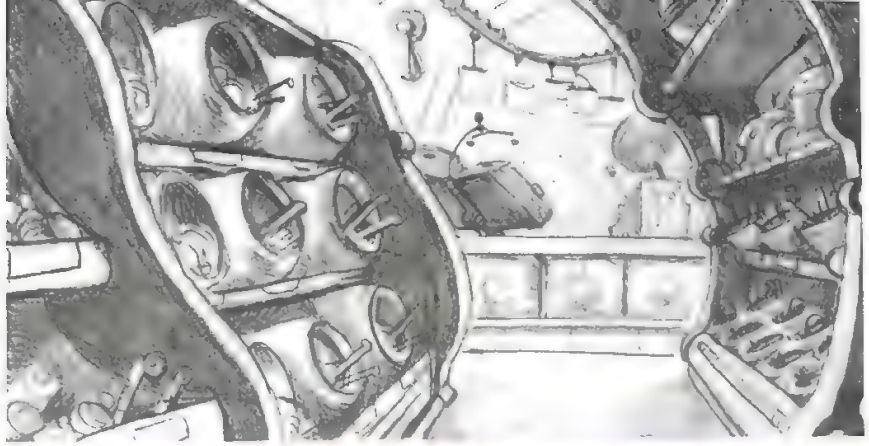


Above: JACK HAMMER
2003, Final Render

Right, from top:
JACK HAMMER'S AISLE
Michael Knapp/Bill Joyce, 10/2002, Pencil, 14 x 17

JACK HAMMER'S STORE INTERIOR
Thomas Cardone, 1/2003, Digital

HIGH-END AISLE
Michael Knapp, 10/2002, Digital



CHOP SHOP

RATCHET AND MADAME GASKET
Dice Tsutsumi, 2001, Digital

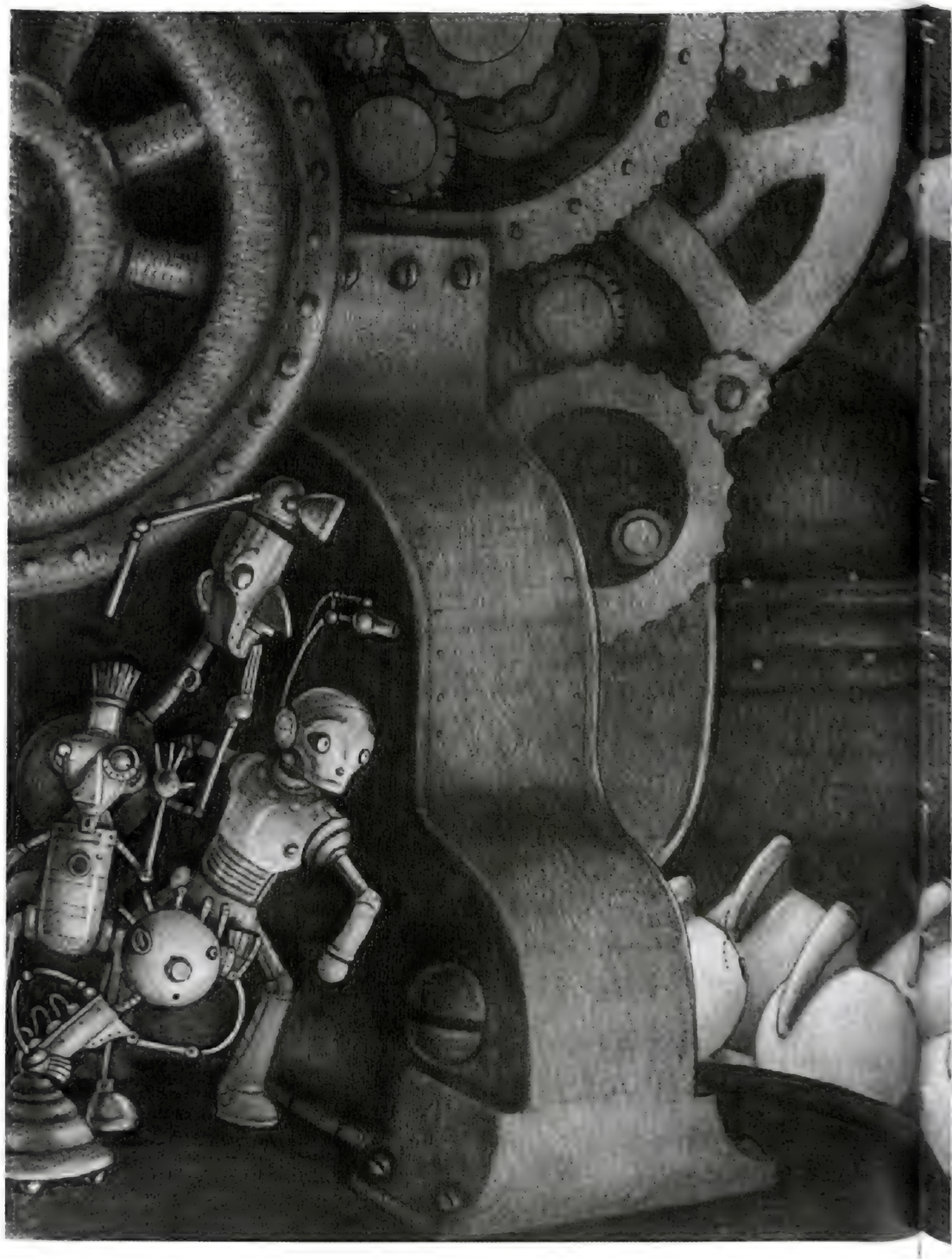
TO THE EYE OF THE BEHOLDER, ROBOT CITY'S CHOP SHOP, where outmoded robots are sent against their will to be turned into scrap metal, is an unholy mess. To the animators, it represents a mountain of detail, and one of the most complex sequences that the Blue Sky team has ever brought to life. The visual richness of the Chop Shop sequences, along with the superabundance of detail in *Robots* in general, necessitated considerable innovation to realize the visions of the artists within the time and budget allowed.

Carl Ludwig, the studio's head of technology and one of the founders of Blue Sky, looked forward to the challenge. "Early on, we said we didn't want to hold back creatively. Rather than saying, 'Well no, we don't have the tools for this,' or 'We can't handle it,' we decided to just go for it. The designs that the artists came up with were extraordinary and we wanted to be able to stay true to that vision and not have to compromise."

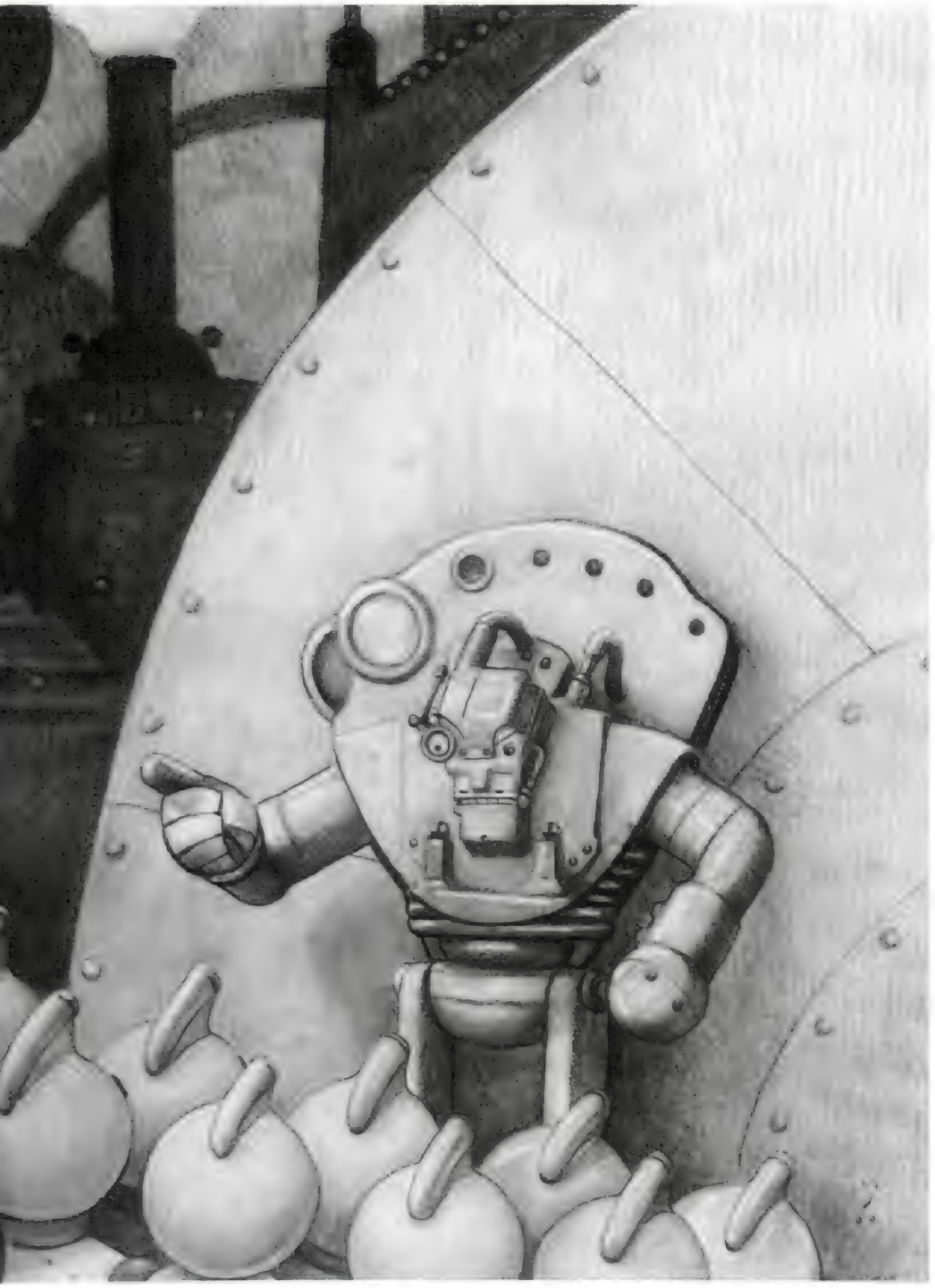
The integration of the art and technology departments at Blue Sky is fluid and harmonious, with the divisions alternately leading and pushing each other to solve difficult problems, like those of the Chop Shop. "One of the things that distinguishes us from other studios is that there's no real hierarchy as far as who can throw in an idea," says [materials lead] Mike Eringis. "We're constantly meeting and coming up with crazier and crazier ways to work more efficiently. We never get stubborn and decide, well, this is the way that Blue Sky works, and we need to stick with it."

One of the film's ongoing challenges was how to apply detailed textures to the characters' materials. In the Chop Shop, with characters in various stages of decomposition, the challenge became extreme; the artists had nowhere to hide, forced to reveal and render what's *under* a robot's paint. Traditionally, textures for CG characters are achieved through a technique called texture mapping, where 2-D images are painted and then conformed onto 3-D models. However, this technique, besides being expensive in terms of man-hours, proved inadequate for producing the rich stratification of dermal layers needed in *Robots*. A new procedure was developed to materialize multiple-surface layers, for example, a core metal base followed by corrosion, primer, paint, and oxidation.

Carl Ludwig explains how this technique differs from traditional texture mapping: "When you want something to be in a certain area, like a grease spot, everyone else tends to do it with standard texture-mapping tools. But if I take a painted



EARLY CHOP SHOP
Bill Joyce, 2000, Pencil



map and map it on, then I've wrapped a two-dimensional object around a three-dimensional object, and there are all sorts of positioning problems associated with that. Also, when you transition to another subpart of the character, you have to provide a whole new set of coordinates. What we came up with is a new way to provide textures interactively, based on world coordinates rather than surface coordinates. When you deal with a world space system, it's even and isotropic throughout, so you have a well-behaved system that exists in 3-D."

Using the new technique, artists could write algorithms to automatically adapt textures to an object's shape and girth, say, by finding sharp corners and chipping off the paint.

The use of automation was crucial in the Chop Shop for another reason: Madame Gasket's gaggle of evil minions. These multitudinous little robots were the tip-off to the filmmakers that the usual workflow of designing characters individually and sending them through modeling and rigging would be unfeasible in *Robots*. The solution was to create Franken-bots: libraries of existing body parts that could be mixed and matched to create new characters.

Combined with the procedural texturing techniques, which guaranteed randomly assigned colors and materials for each robot, the Franken-bots system could create a near-infinite number of unique robots with minimum effort. As the film progressed, the need for even more articulated background characters developed, and this led to the creation of the Cheap-bots: in essence, Franken-bots with "scalable rigs" added. Lead Rigger Mark Piretti explains: "The modelers and designers put together a number of different robot types, like the biwheel bot, the uniwheel bot, and the multiped bot. Each one of these had a scalable rig with a control panel where the designers and modelers could change forty or so different parameters, like the length of a character's spine and arms, the width of the shoulders and hips, and the distance between the eyes. Once the proportions of the rig had been changed, they'd swap the body parts in and out to design the character, take a snapshot of the rig, and pass it off to the riggers to finalize."

"The use of the backlot materials brought an exponential curve to the volume of stuff we could create," says Lead Modeler Mike DeFeo, "and as the library of models itself got bigger and bigger, we had more variety. It all just fed on itself and became this really amazing machine that cranked out tons of characters. If you look at some other CG pictures, the quality quickly drops off [in less important characters], but ours are almost as good as the lead characters."

Blue Sky's attention to the smallest details, such as the way a piece of metal rusts, combined with a technical crew willing to tackle the toughest digital challenges, is the reason that they are able to bring to life locations like the Chop Shop with a level of richness and complexity seldom seen in digital animation.

Those were wicked fun days when I was designing the Chop Shop. I'd sit there going, "I've got a wife and kids, and I'm designing a machine that can kill everyone." It's a strange satisfaction that I can't quite come to grips with.

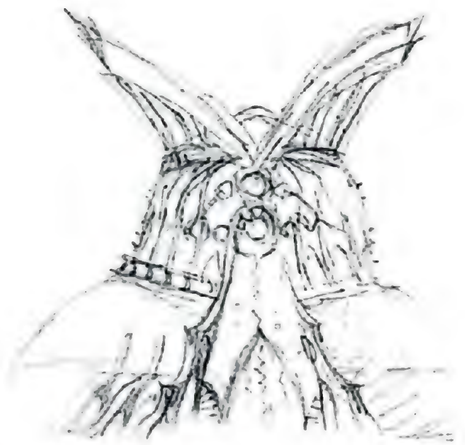
WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

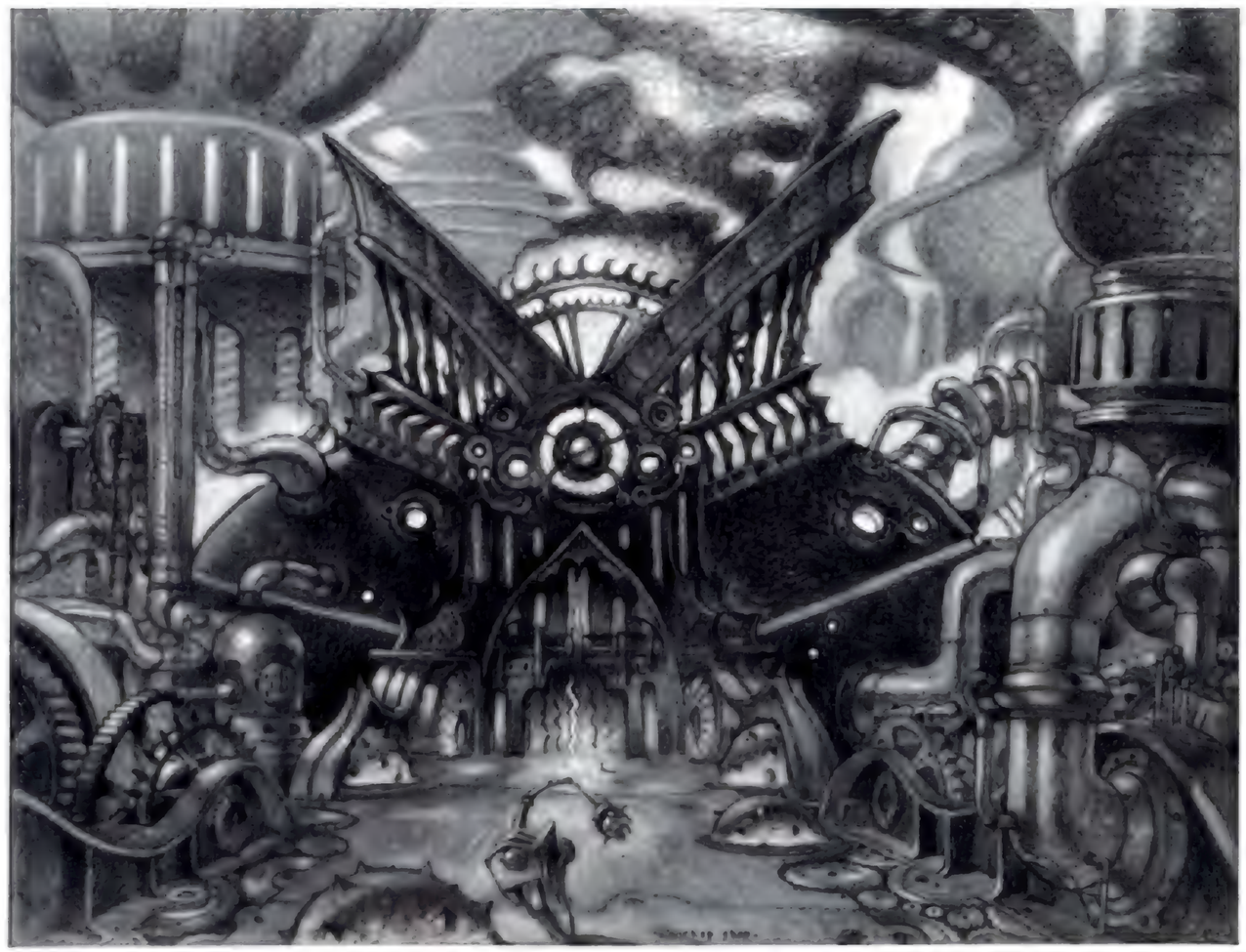
Down in the Chop Shop with Madame Gasket, there's a lot more atmosphere and dust, so you see the effects of light a bit more. Up with Ratchet at the High-End part of the city, there's no building taller than Big Weld Industries, so there's unencumbered sunlight that we can play with and bounce off all the High-End materials.

STEVE MARTINO, ART DIRECTOR

Early on, Dice Tsutsumi asked me, if I were to pick a cinematographer to make this movie, who would I pick? I said Vittorio Storaro, who did *Apocalypse Now* and *1900*. And Dice started painting that way. It shows in a number of scenes—they look just like Storaro lit them.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER



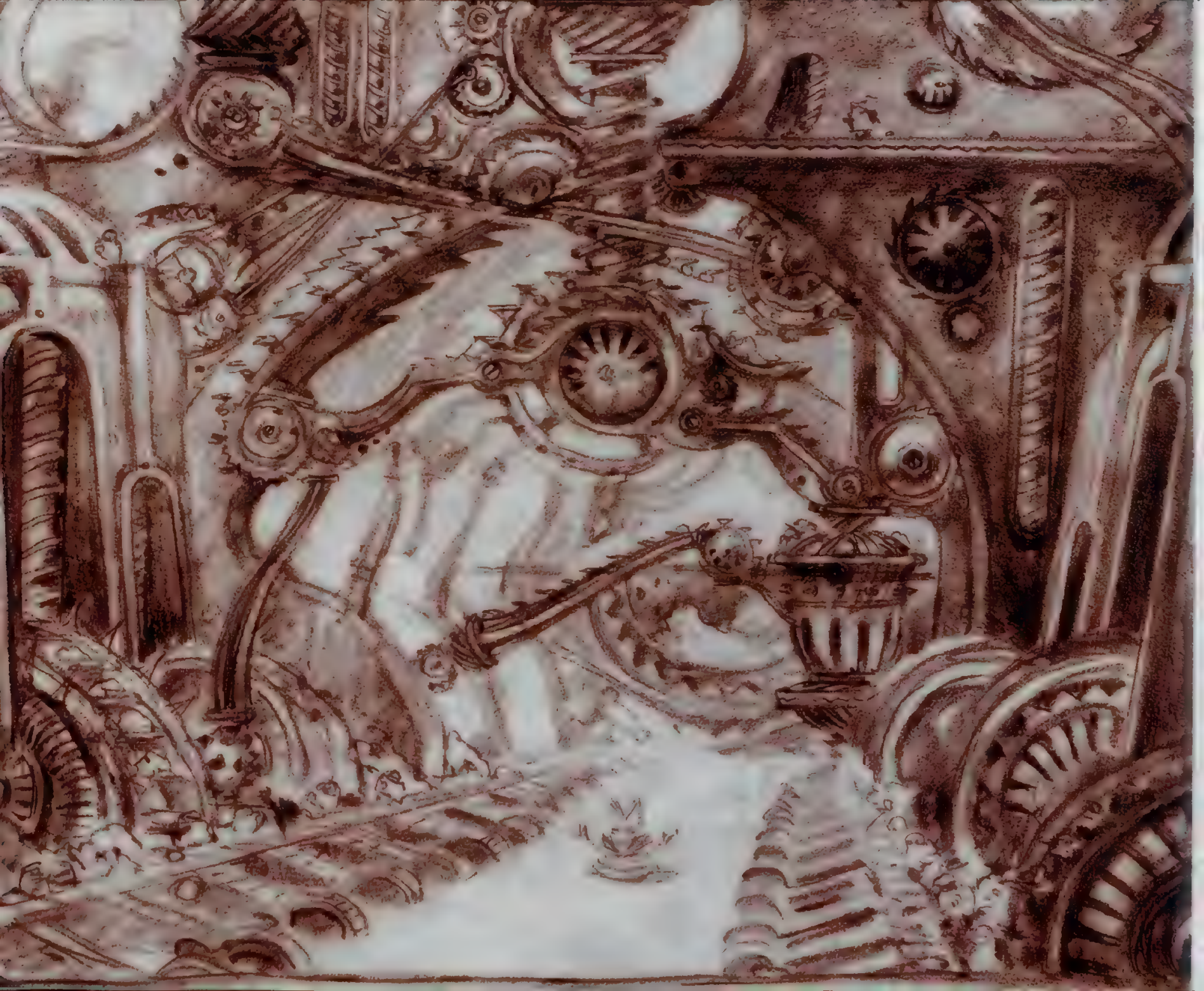


Clockwise from top left:
CHOP SHOP CONCEPT
Bill Joyce, 2/2004, Pencil, 11 x 17

CHOP SHOP EXTERIOR
Daniel López Muñoz, 2003, Pencil, 14 x 17

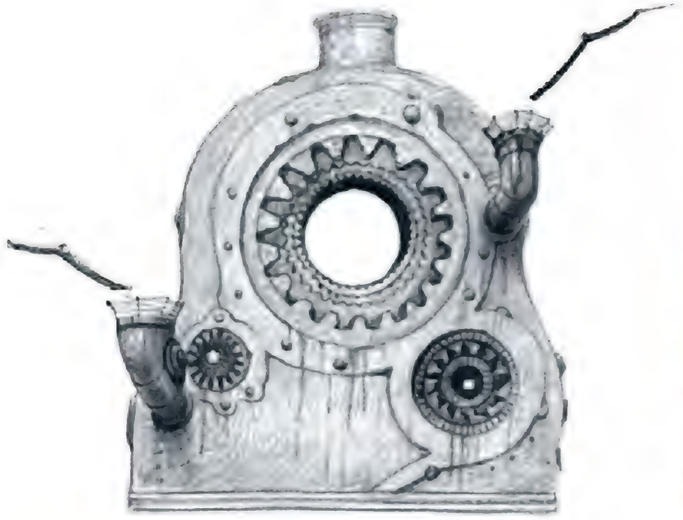
CHOP SHOP EXTERIOR
Daniel López Muñoz, 2003, Pencil, 14 x 16

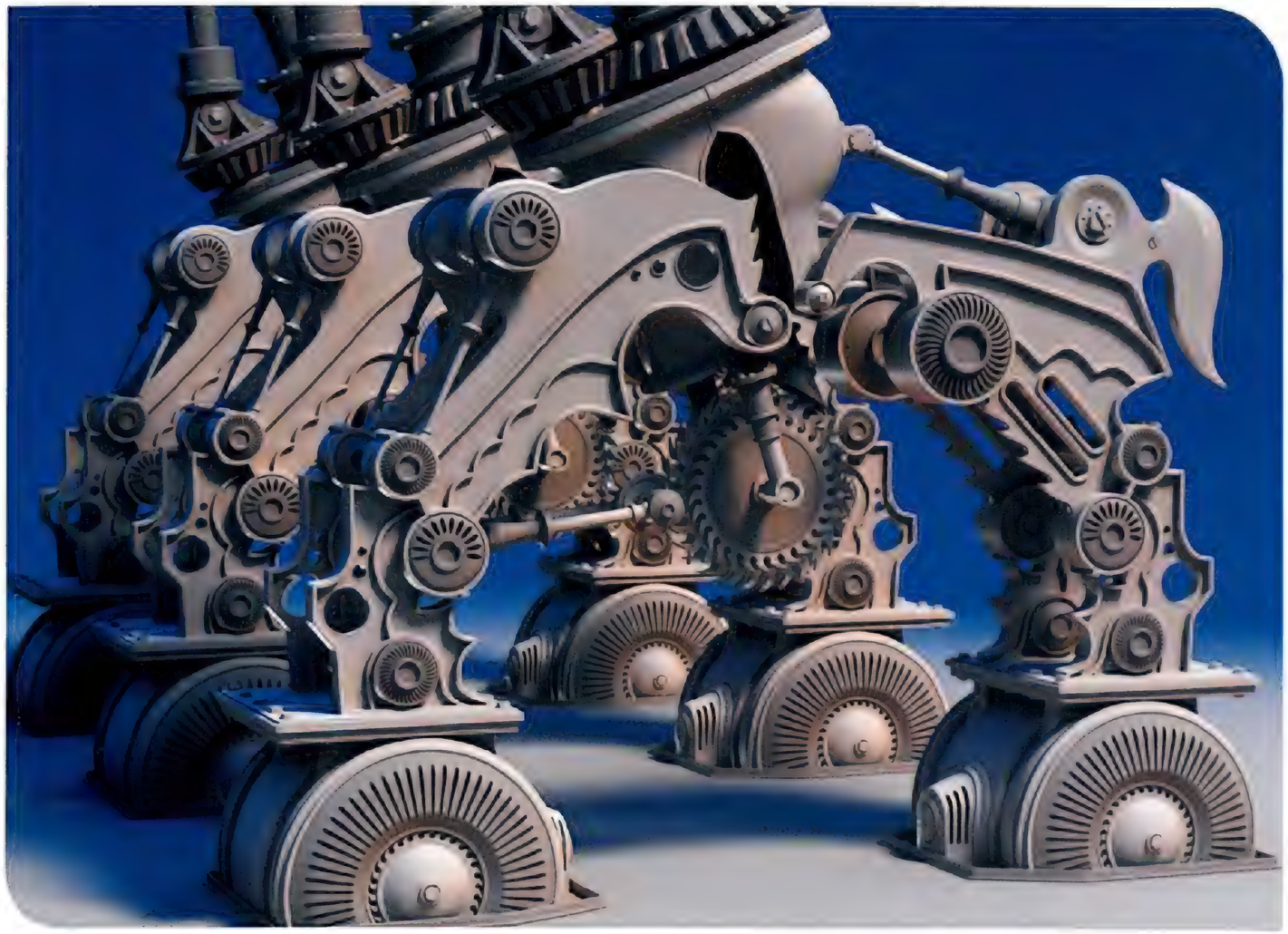
Opposite: CHOP SHOP EXTERIOR
Daniel López Muñoz, 2003, Pencil/Digital, 14 x 17



In some weird way, the interior of the Chop Shop was one of the easiest places to figure out. We knew the things that we wanted to go on in there, that we wanted conveyor belts where chopped up pieces would feed into smelters and grinders and all that kind of stuff, so it was just a matter of using those motifs and making everything sharp and dangerous. I really have to give credit to Daniel López Muñoz for figuring this out. I did a really simple quick sketch and Daniel fleshed out the interior from that concept. He just nailed it dead-on.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER





Above left: CHOP SHOP GRINDER
Bill Joyce, 2003, Pencil, 11 x 11

Above right: CHOP SHOP GRINDER
Design by Daniel López Muñoz,
CG Model by Brien Hindman,
2003, Radiosity Render

Left: CHOP SHOP ARCHES
Design by Daniel López Muñoz,
CG Model by Salvatore Melluso,
2003, Radiosity Render

Opposite: CHOP SHOP
Daniel López Muñoz, 2002, Pencil, 13 x 10

It's amazing how close the modeling actually got to the complexity of the art; the Chop Shop interior is really an amazingly elaborate environment.

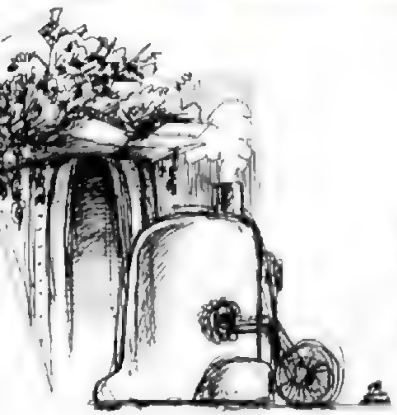
MIKE ERINGIS, MATERIALS LEAD

Bill's a big fan of round shapes. You'll find very few rectilinear designs in this film. Round shapes give you a sense of playfulness, I think that's part of the whimsical quality of Bill's work that people talk about. But we did find places to counterbalance that, like the Chop Shop where our villains live. We brought some really strong hard angles in there to make it more alien, more threatening.

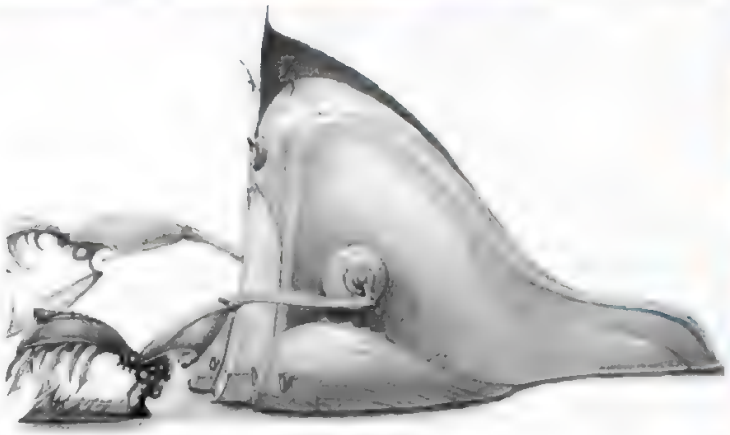
STEVE MARTINO, ART DIRECTOR

Left: STREET SWEEPER GETS AN OUTMODE
Bill Joyce/Dice Tsutsumi, 2000, Pencil/Digital

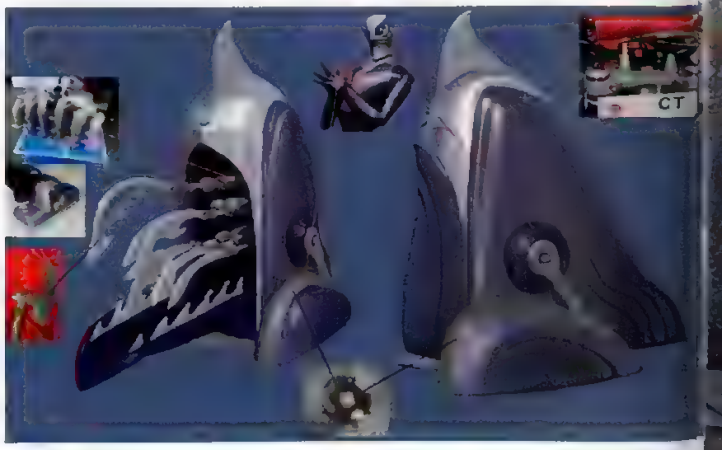
Opposite: STREET SWEEPER GETS AN OUTMODE
Bill Joyce, 2000, Pencil, 14 x 17



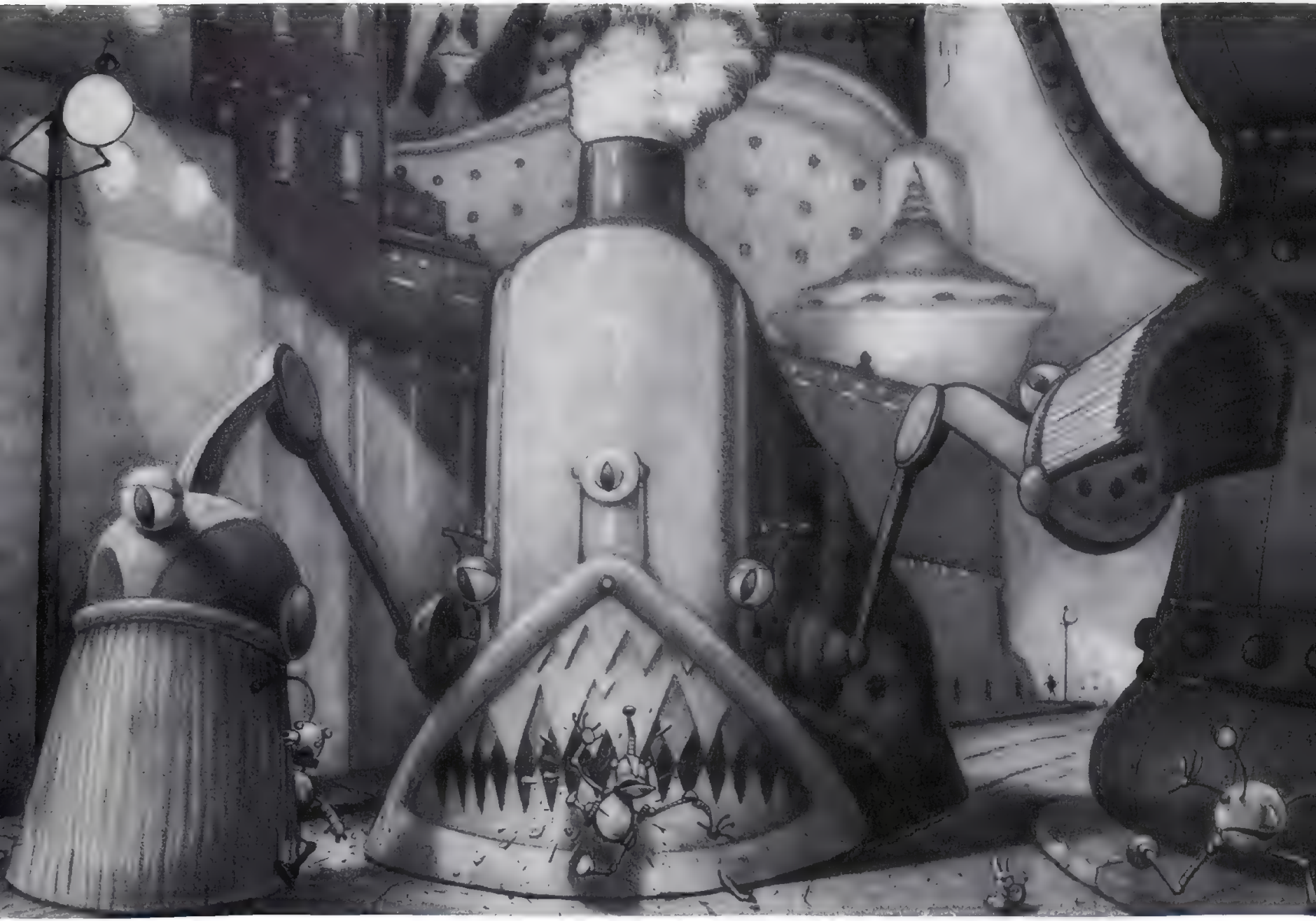
SWEEPER SKETCH
Steve Martino, 2003, Ink, 7 x 7



HIGH-END STREET SWEEPER
Bill Joyce, Pencil, 2002, 22 x 13



HIGH-END STREET SWEEPER COLOR CALLOUTS
Vincent Nguyen, 6/2003, Digital



MADAME GASKET

THE DUTCHESS FROM *ALICE IN WONDERLAND*
Sir John Tenniel
Reference for Madame Gasket

I kept thinking of this mean old hag. She's made of ground-up metal and she has this furnace inside of her that glows from within and there's all this smoke wisping out of her head. She's sort of like a combination of meat slicers and the Duchess from John Tenniel's *Alice in Wonderland* illustrations.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

Gasket's mouth has no deformations. It's like a bike chain basically that the animator has posed and created mouth shapes for.

MARK PIRETTI, RIGGING LEAD

No matter how horrible and awful Ratchet is in his own world, whenever he finds himself with his mother, Gasket, he's reduced to being a subservient little boy. She still has this incredible hold on him. There's the idea of this mother-and-son dynamic that the villain was being driven by a mother whom he could never satisfy. No matter how villainous he was, his mother never felt like it was enough.

CHRIS MELEDANDRI,
PRESIDENT OF FOX FEATURE ANIMATION

Below: MADAME GASKET CONCEPT
Bill Joyce, 2000, Pencil/Ink, 13 x 11

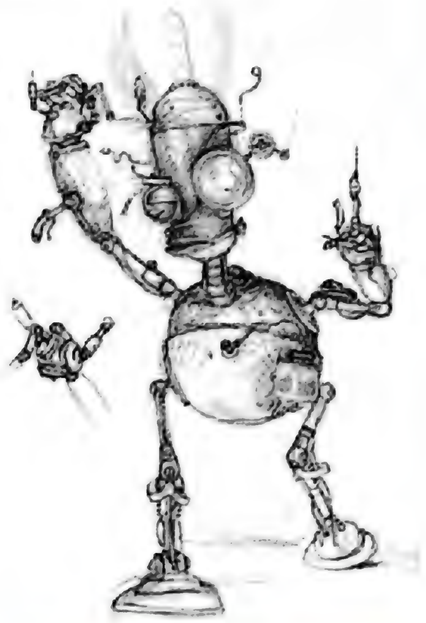
Below right: MADAME GASKET
Bill Joyce, 2001, Pencil, 11 x 8

MADAME GASKET
Michael Knapp, 2001, Digital

MADAME GASKET
2003, Final Render

Greg Couch designed Veyizmir. He's like Rolie Polie Olie with syphilis and cancer. He brainwashes Big Weld after Ratchet smacks Big Weld on the head and knocks him out. He's vile. He has a sort of colostomy bag that swings around.

WILLIAM JOYCE,
EXECUTIVE PRODUCER/PRODUCTION DESIGNER

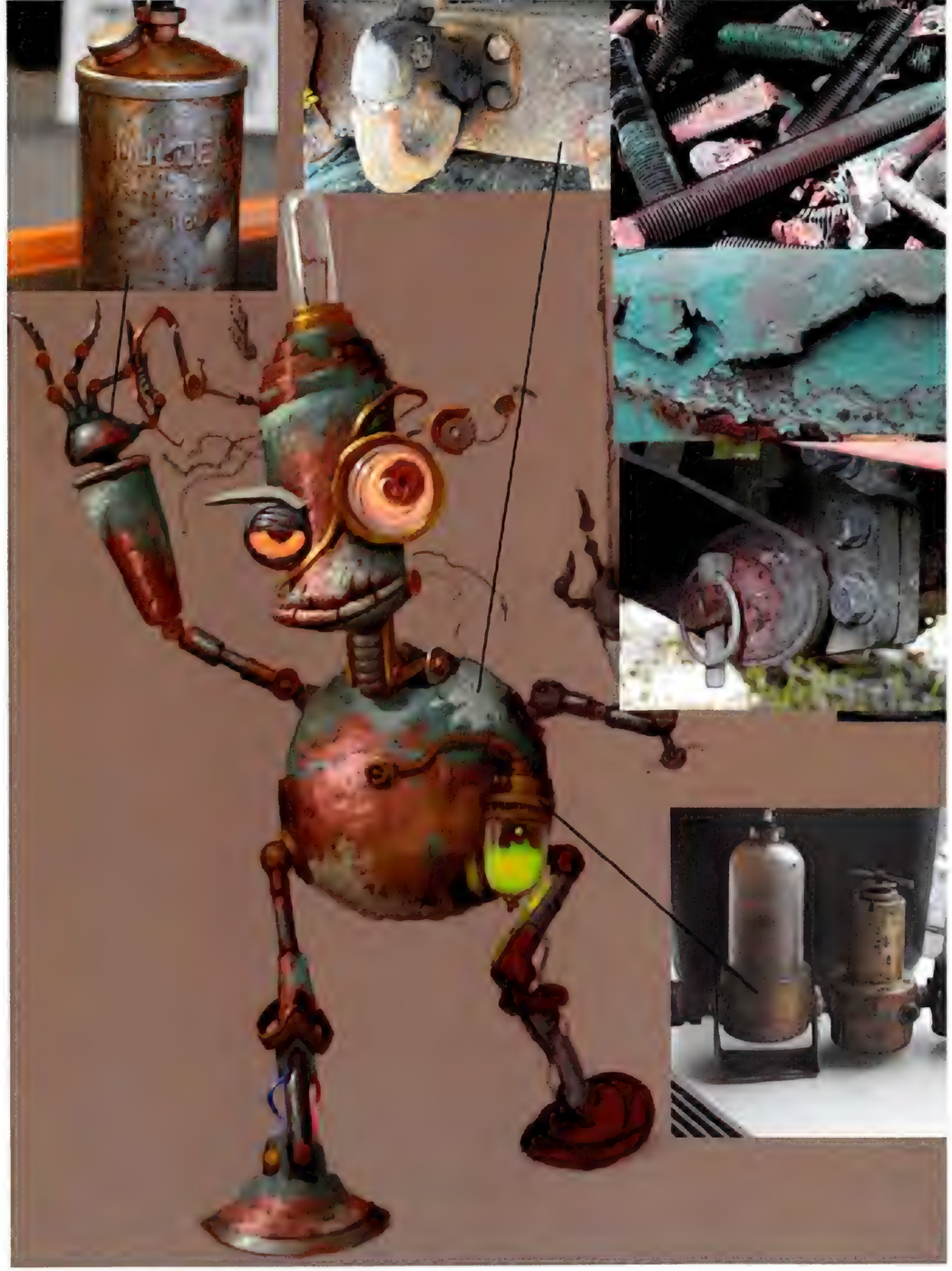


Clockwise from near right:
DR. VEYIZMIR
Greg Couch, 8/2002, Pencil, 10 x 13

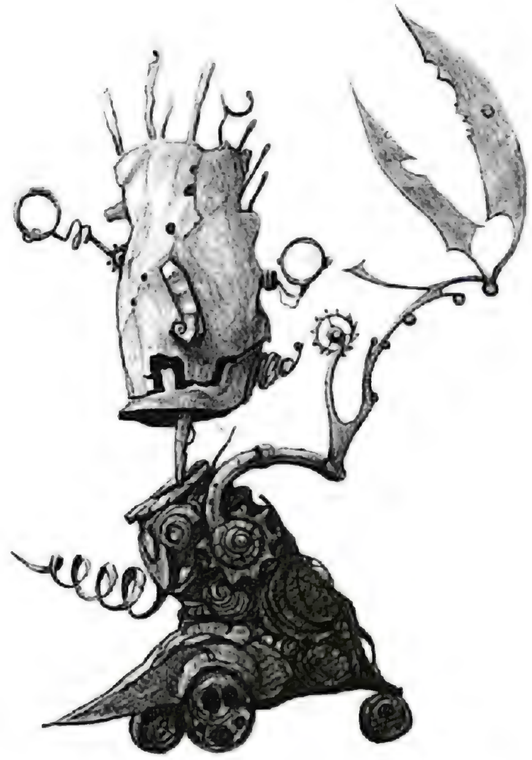
DR. VEYIZMIR COLOR CALLOUTS
Dice Tsutsumi, 8/2002, Digital

MR. GASKET
2003, Final Render

MR. GASKET
Steve Martino, 2002, Pencil, 11 x 14

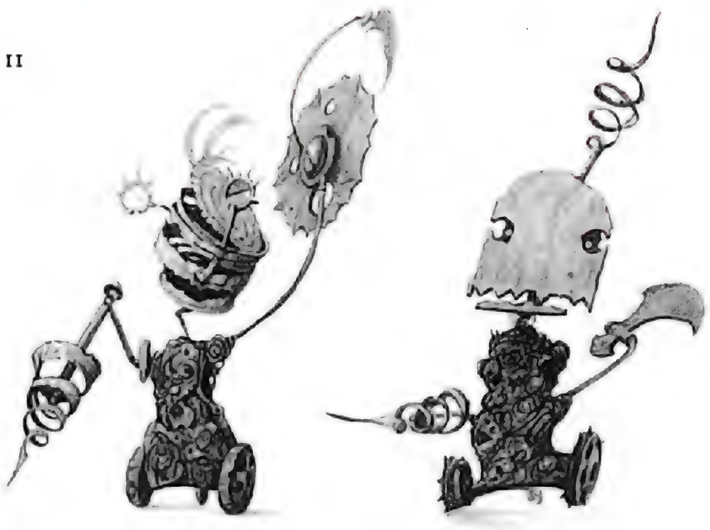


There's a simple dynamic simulation inside Veyizmir's little bottle, so the animators can do whatever they want with him and the liquid in the bottle will knock around accordingly. That's another cool thing about our renderer —it makes really effective transparent surfaces.
MIKE ERINGIS, MATERIALS LEAD



Above: MINION COLOR
Greg Couch, 3/2003, Pencil/Digital, 11 x 11

Right and below: MINIONS
Bill Joyce, 2003, Pencil, 11 x 14 each



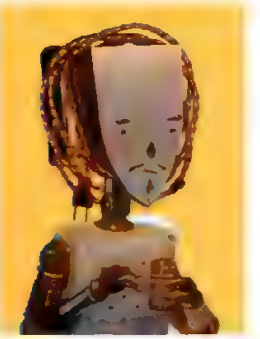
ARTISTS

BILL JOYCE

CHRIS WEDGE

CHRIS MELEDANDRI

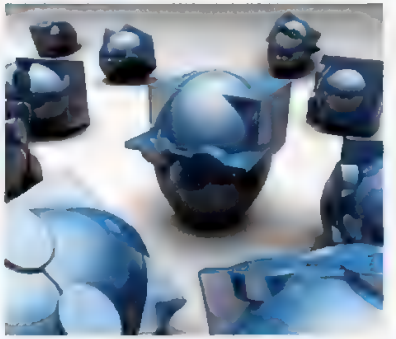
THOMAS CARDONE



GREG COUCH

PETER DE SÈVE

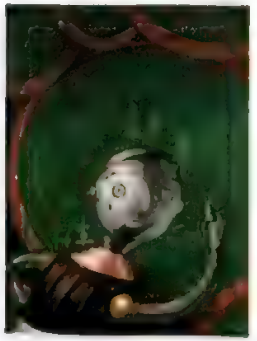
MICHAEL DEFEO



MIKE ERINGIS

DAVID GORDON

MICHAEL KNAPP



CARL LUDWIG

STEVE MARTINO

DANIEL LÓPEZ MUÑOZ

VINCENT NGUYEN

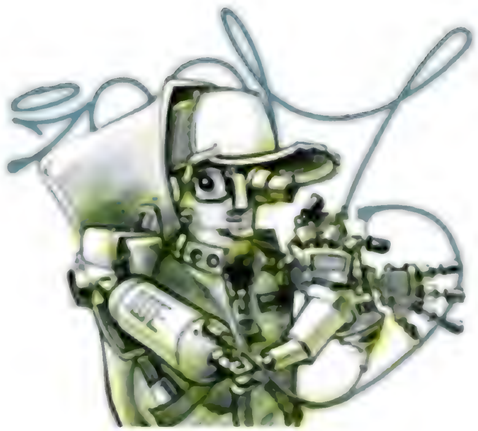
MARK PIRETTI

CARLOS SALDANHA

MIKE THURMEIER

DICE TSUTSUMI

TODD WINTER



ZEEM

ACKNOWLEDGMENTS

We extend our gratitude to Chronicle Books for having the excitement about *Robots* to create this wonderful book. Special thanks to the *Robots* team at Chronicle: Sarah Malarkey; Jodi Davis; our author, Amid Amidi; Pamela Geismar; and Pete Friedrich, who pulled out the stops to get this book to press in record time.

To our visionary Director, Chris Wedge, who had the idea of a movie about robots and never gave up until he brought us all to Robot City. And to our extraordinary Executive Producer/Production Designer, Bill Joyce, who shared the vision, designed the world and made us never want to leave it.

To each person at Blue Sky who has given everything to make this film the enchanting experience it is. Blue Sky is an outstanding team of people whose craft shows in every frame of *Robots*. A special thanks to the immeasurable contributions of Codirector Carlos Saldanha, Coproducer Jerry Davis, Coproducer John Donkin, Blue Sky founders Carl Ludwig and Eugene Troubetzkoy, CFO of Blue Sky Brian Keane, and Art Director Steve Martino.

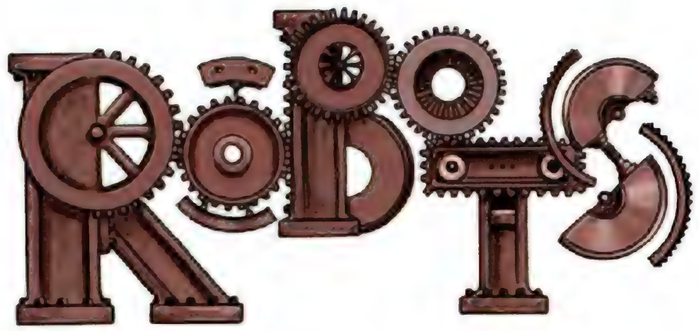
To our writers Lowell Ganz and Babaloo Mandel: Your tireless efforts have made this the heartfelt and thoroughly enjoyable story that it is. To David Lindsay-Abaire, who originated many of our great characters.

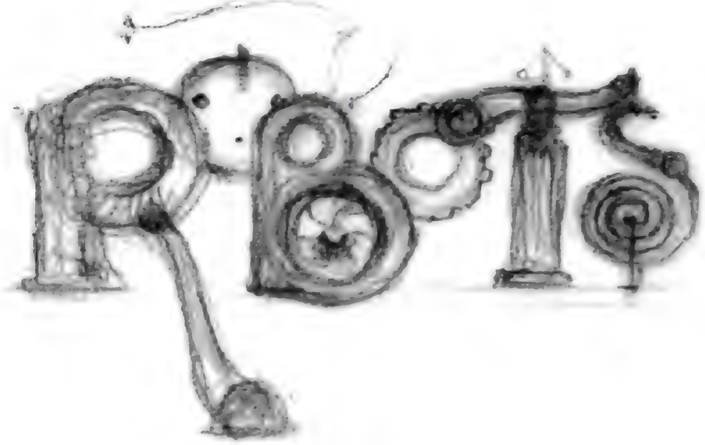
And to those people behind the scenes at Blue Sky Studios and Twentieth Century Fox who coordinated the many pieces of the puzzle: Linda Zazza, Melanie Martini, the entire Blue Sky Art Department; and from Fox, Virginia King and Kate Lewine.

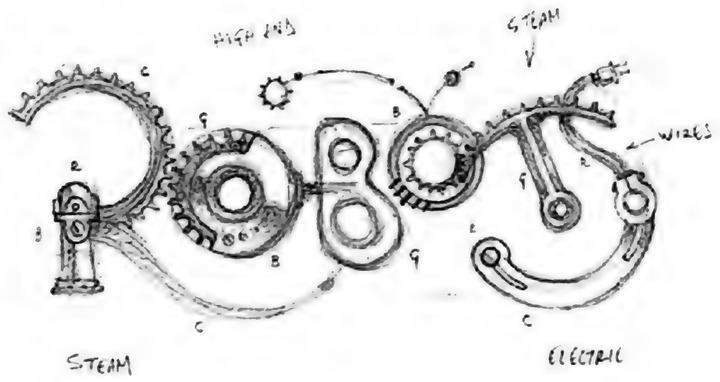
CHRIS MELEDANDRI

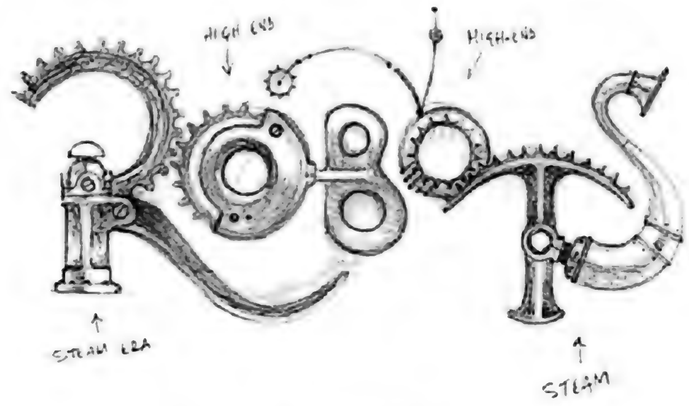
My gratitude to the following people who made this book possible: Bill Joyce. Chris Meledandri at Fox Feature Animation. The *Robots* production principals: Greg Couch, Mike DeFeo, Mike Eringis, Mike Knapp, Carl Ludwig, Steve Martino, Mark Piretti, Carlos Saldanha, Mike Thurmeier, Dice Tsutsumi, Chris Wedge. Taylor Jessen for his invaluable editorial contributions. Sarah Malarkey at Chronicle. Virginia King at Fox Licensing & Merchandising. Trish Farnsworth-Smith at howdy ink. Cathy Cultra, Jodi Davis, Kate Lewine, Lacy Stuart. Charlie for the bread pudding. And my parents, of course.

AMID AMIDI





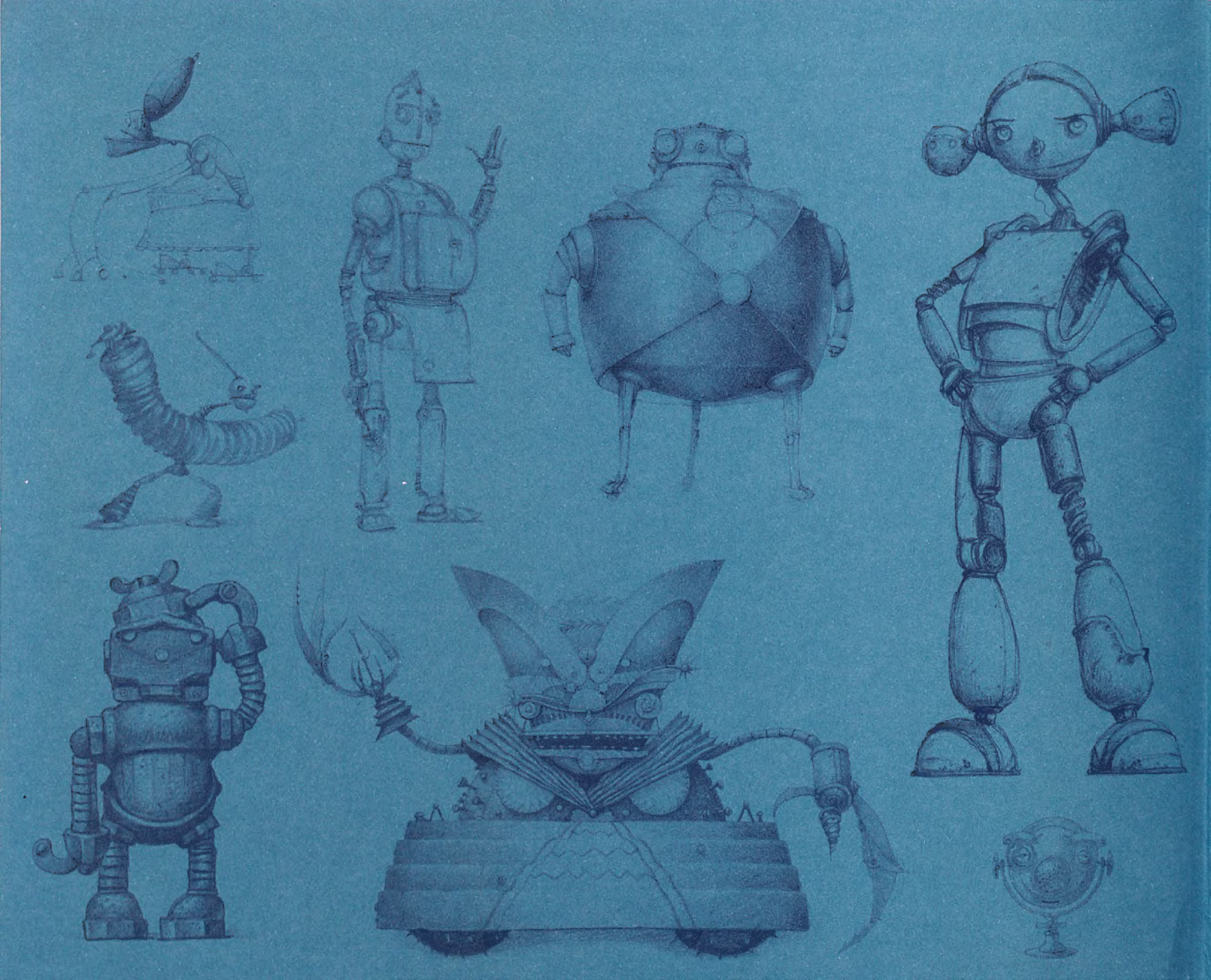


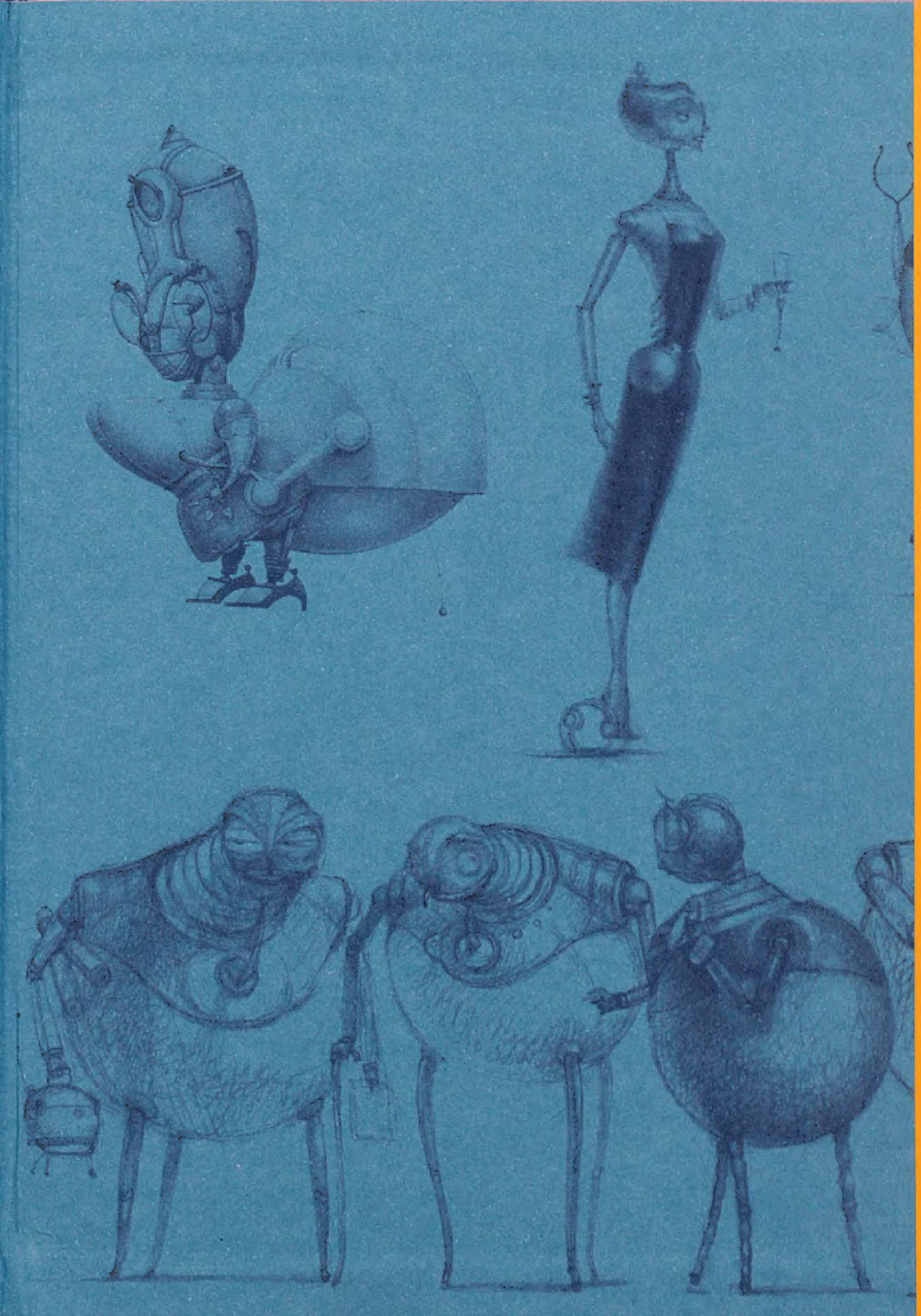


LOGO DEVELOPMENT

Left, top to bottom:
Steve Martino, 2002, Pencil/Digital
Fox Advertising and Marketing, 5/2003, Digital
Michael Knapp, 2003, Pencil
Michael Knapp, 2003, Pencil

Right, top to bottom:
Daniel López Muñoz, 2003, Pencil
Daniel López Muñoz, 2003, Pencil
Steve Martino, 2003, Pencil/Digital
Steve Martino/Dice Tsutsumi, 2003, Digital





AMID AMIDI is the publisher and editor of the highly acclaimed magazine *Animation Blast* and co-founder of the animation industry blog CartoonBrew.com. In addition to writing, Amidi works in the animation industry. He lives in Los Angeles.

WILLIAM JOYCE is the executive producer and production designer of *Robots*. He is also the celebrated author and illustrator of several award-winning, best-selling classics beloved by children and adults alike. Two of Joyce's characters have been developed into television shows: *George Shrinks* and Emmy®-winning *Rolie Polie Olie*. He lives in Shreveport, Louisiana.

CHRIS WEDGE, the director of *Ice Age* and the Academy Award®–winning short *Bunny*, is co-founder and vice president of creative development at Blue Sky Studios. Wedge has also directed the character animation sequences for the Warner Bros./Geffen Films production *Joe's Apartment* and has supervised the creative teams for several other feature-length films. He lives in Katonah, New York.

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Jacket design by Pamela Geismar and Pete Friedrich/Charette

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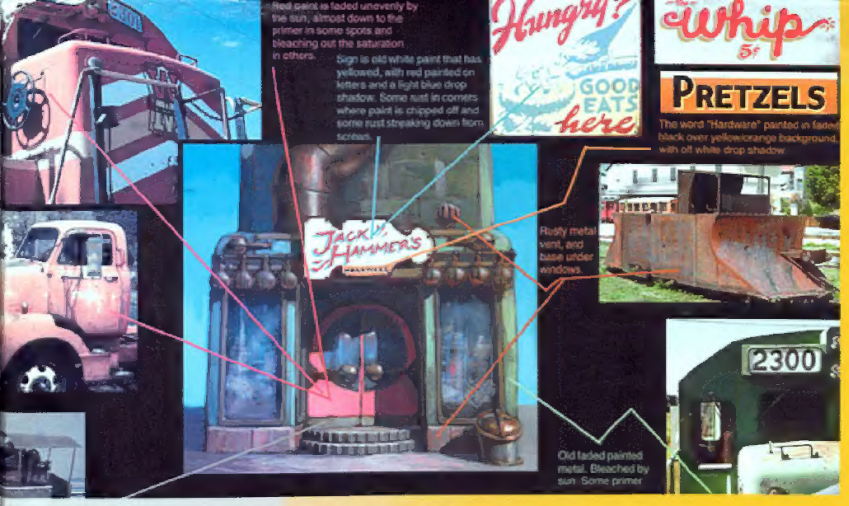

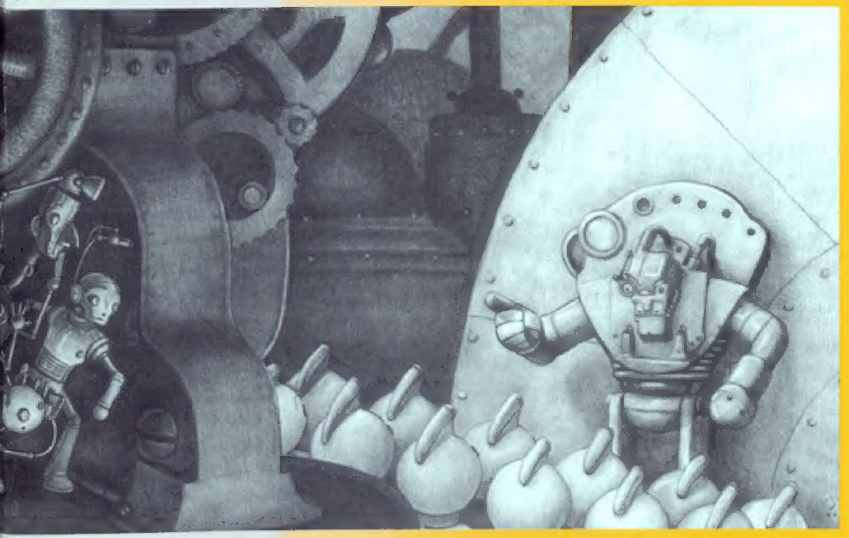

The Art of Robots tells the riveting, behind-the-scenes story of how the creative team behind the block-buster hit *Ice Age*—Blue Sky Studios, Twentieth Century Fox, and Academy Award®–winning director Chris Wedge—joined forces with acclaimed children's author William Joyce to make another animated classic in *Robots*. Rich with concept art, sketches, and diagrams, this beautiful compendium reveals the nuts-and-bolts of an extraordinary animated film in the making.

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